Industrial FINISHING

Reg. U. S. Pat. Office

Published Monthly in the Interest of Modern Production Finishing

Vol. XVI, No. 6 APRIL, 1940 $2.00 a Year

Contents of This Issue

Letters from Readers of Industrial Finishing 4
Graining from an Etched Metal Plate 12
Condition of Sandpaper for Best Results in the Finishing Room 17
Operation of Conveyor Ovens 21
Small Wood Products Finished by Spraying, Tumbling and Dipping 25
Value of a Stripping Tank for Use in Connection with Metal Finishing 31
Why and How I Maintain a Clean Finishing Room 43
Questions; Answers 50
New Materials, Supplies, Equipment 62
Editorial 74

Experience with Hot Lacquer 16
Free Book on Solvent Recovery 16
Hilo Finishes at Heating & Ventilating Show 20
Free Book about Spraying 24
Alkyd Resin Finishes 34
Red Lead Bulletin 38
16-Page Mixer Catalog 38
Using Wood Filler 45
Fluorescent Lamp Catalog 48
Propeller Fan Catalog 48
Using the Right Wood Sealer 60
Conveyor Firm Appoints Eastern Representatives 60
"Dipspray" Process of Wrinkle Finishing 72
Rubber Polishing Wheels 73
The Finish on Your Product 73
Deoxylyte and Clorodine 73
"Metcolizing" Protects Metal 78
Measures Thickness of Finish 79
Spray Booth Filter Bulletin 79

"Classified Advertising" Section 79
Index to Advertisers 80

Published by

Practical Publications, Inc., 222 E. Ohio St., Indianapolis, Ind.

Eastern Representative: C. A. Larson, 254 West 31st St., New York City; Phone Penna. 6-9049

Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Servicemen's Kits Found

As a result of the inquiry for a Serviceman's kit, published on pages 7 and 8, February issue, we have learned of three or four concerns in position to supply these kits.—ED.

One-Coat Hammer Finish

We are interested in finding a paint or lacquer that will require only one coat to obtain a hammer finish. We are particularly interested in eliminating any baking process to obtain this finish.—R. S. Corp. (Manufacturing Engineers)

Hammered Silver Effect

We believe we have seen in INDUSTRIAL FINISHING, from time to time, articles in reference to a finish that gives the effect of hammered silver. Can you put us in touch with the manufacturers of this product so that we may secure more information?—W. R. Co. (Refrigerators)

For Testing Finishes

We have read with interest the articles on finishing woodwork in your magazine, and would be glad if you could put us in touch with manufacturers of testing machines for ascertaining the viscosity of special processes of varnish, cellulose and resin finishes. Also, if you happen to have a reprint of an article on the testing of wood finish, please send us a copy. This is for the purpose of putting up a small laboratory and research station. We will appreciate any assistance you might be able to give us.—M. H. & Co. (Fine Furniture), Glasgow, Scotland.

Multiple Striping

Please refer to an article appearing on page 89, in the February issue of INDUSTRIAL FINISHING, on methods of applying bands or stripes (two or more) at one time and in one operation, by a mechanical striper or by pressure striping units. We would thank you to furnish us with the names of manufacturers selling these stripers.—E. & Sons, (Foil Bottle Caps).

Air-Dry Wrinkle

We are interested in learning of some firm that makes air-drying wrinkle or crackle finish lacquer, which we intend to use for finishing wood. If you could send us the names of any such manufacturers we would appreciate it very much. —I. M. Co.

To Buy from U. S. A.

We would be obliged if you would kindly let us know of a periodical in the United States that gives the manufacturers of the raw materials

YOU MAY NOT MAKE CLOCKS

but...

What's your Problem?

● Time is important in that plant. Its product measures time. Its costs are based on time. Saving time in spray-finishing odd-shaped clock cases was a problem—until a DeVilbiss Spray Specialist was called in for recommendations.

DeVilbiss Automatic Spray Equipment was the solution—and look at the amazing results that DeVilbiss engineers produced. Product finishing was increased to 900 clock cases an hour, the finish baked in an infra-red ray oven and hardened in a cooling tunnel—all within a floor space not much larger than the top of your desk.

This is just one of hundreds of spray-finishing problems that have been solved with most profitable results by the many specialized types of DeVilbiss Automatic Machines. Find out what they can do for you. Call the DeVilbiss representative today.

THE DeVILBISS COMPANY · TOLEDO, OHIO
Canadian Plant: WINDSOR, ONTARIO

DE VILBISS SPRAY SYSTEMS

These are all hot numbers!

They will fit in and greatly improve any wood finishing plan or schedule

1. **DU BAR BLEACH**—The closest to perfection and the most fool proof. If you have bleaching problems we GUARANTEE DuBar will solve them.
2. **WATEROIL STAINS**—ALONE in their class. DO NOT PRECIPITATE OR CHANGE WITH AGE. Fast to light, non-bleeding, quick drying and non-grain-raising.
3. **NO. 1900 CLEAN-UP POLISH**—Absolutely eliminates bluish bloom or haze—leaves surface clear, clean, free from dust collecting or finger marking.
4. **TOPS**—A unique new top coat equal in body to two coats of ordinary lacquer. 30% greater mileage. Lacquer speed. Extremely tough; alcohol resistant. Satisfaction guaranteed.

Liberal Working Samples to Responsible Manufacturers

V. J. DOLAN & COMPANY, INC.

Mfrs. of "Unquestionable Quality" Industrial Finishes

1838-32 NORTH LARAMIE AVENUE CHICAGO, ILLINOIS

for finishing products, namely nitrocotton, pigments, synthetic resins, plasticisers, etc. We are manufacturers of lacquer, enamels, etc., and would be very much interested to buy our raw materials on the American market.—C. A. Ltd., Johannesburg, South Africa.

Tumble Finishing

Would you be kind enough to let us know the names and addresses of firms that manufacture tumblers and tumbling materials? We want to get information about finishing small wood turnings by the tumbling method.—P. & L. Co.

Automatic Spray Machines

We are manufacturers of wood novelty items, with the greatest proportion of our production in children's nursery seats.

For some time the question of automatic spraying has been uppermost in our mind, because of the excessive amount of handling under our present set-up.

The management has been sold on the idea of automatic spraying and would be interested in contacting those companies who are engaged in the manufacture of a standard type of spraying equipment.

In the June 1939 copy of INDUSTRIAL FINISHING, page 48, we noticed the automatic conveyor and spray booth manufactured by Binks. We require a similar set-up and would like to know the names of the other companies who manufacture automatic spray equipment.—C. N. Co.

Custom Finishers

As indicated by our letterhead we are enamelers, handling finishing work for many small manufacturers and also the overflow for some of the larger manufacturers in this vicinity (Milwaukee). We are interested in having your publication, INDUSTRIAL FINISHING, and would appreciate having rates on same.—The Spray-Rite Co. "It's Painted Right at Spray-Rite."

Dipping Equipment

We note on page 85, of the February issue of INDUSTRIAL FINISHING, that the P. R. Co. inquired about dipping equipment, and we also note that you gave them information as to a source of supply.

We are wondering if you thought of mentioning our name in this connection? You may recall that several years ago the writer wrote an article about dip finishing for your magazine. We are still manufacturing the dipping equipment and have had excellent success with same.

In the event that you overlooked us when supplying P. R. Co. with information, would you be kind enough to either give us their name, or to advise them to get in touch with us, as we are certain we could supply them with equipment to their entire satisfaction. — Louis Bodor, Apex Products Corp.

Silk Screen Graining

Please send us the names of all firms of which you know who manufacture silk screens for producing cabinet wood veneer imitations.—V. S. Corp.

Padding Machine to Apply Lacquer

We are interested in locating a padding machine for the application of a cellulose acetate lacquer to small pieces of fabric. We propose to cut the fabric into the desired shapes, and then to lay several of these small pieces on the lacquering pad and apply pressure from above. The size of this padding device should be 12x18-in., and we will need at least five of them. Could you let us know of a company who is making this type of padding device?—S. Mfg. Co.

Can some reader supply information on this, or suggest where we might find it?—Ed.

Solvent Stills

Will you kindly give us names and addresses of manufacturers of solvent distilleries?—T. H. Co. (Coverings, Fabrics, Trimmings)

Whirl Finishing

I am interested in learning who manufactures a machine for swirl finishing—for the application of a coating on the surface of small metal parts, similar to the samples enclosed and particularly in applying an enamel finish similar to that on these samples.

One of my acquaintances tells me that this firm has advertised in your

FORM-A-ROC

We offer to all industries equipped for baking finishes this highly perfected, heat-converting, synthetic enamel.

FORM-A-ROC

We have combined to an optimum degree the necessary qualities of tremendous hardness, great adhesion, smooth lustrous gloss, and freedom from haze, discoloration and wrinkling.

FORM-A-ROC

Baking schedule is of great flexibility, permitting from 5-50 minutes at 250-375° F.

FORM-A-ROC

No matter which of the present worthy finishes of this type you may be using or planning to use we sincerely recommend that you investigate

FORM-A-ROC

MADE BY

THE VARNISH PRODUCTS CO.

5208 Harvard Avenue

CLEVELAND, O.

LEND THE

BEAUTY OF SPRING

to your product with
a finish coat of

RAYON FLOCKS

in pastel shades selected from our standard color card—then watch your sales and profits rise.

The cost of flocking is small — the enhancement of value of your product is large.

Applicable to all sorts of objects in glass, wood, paper, fabric, metal, etc.

Write for color card and samples—free

NOW!

CLAREMONT WASTE MFG. CO.

Claremont, N. H.

The country's leading makers

publication. He tried to locate the advertisement in his office, but he did not find it readily and suggested that I write you.

As he describes the equipment, the material for coating the parts is contained in a cylinder at the top of the machine and the parts to be coated are in a lower cylinder, with the material in the upper cylinder feeding into the lower cylinder. The machine is rotated rapidly and the parts are covered in this manner. He seemed to think that the equipment would answer our purpose and give us a good finish at a reduced cost, which is what we are interested in.—G. R. H.

Probably your friend has in mind the "Speedip" Whirl Enameler advertised by Ronci Machine Co., Providence, R. I., in February 1940 issue of INDUSTRIAL FINISHING.—ED.

Black for Glass

Would you please give me the name of a company that manufactures a black finish that is used to paint the back of glass (the outside margin around the picture) used for picture easels? I have tried a number of different finishes, but have never found one that shows a pure black color when viewed through the glass with sunlight hitting it. — M.

Wood Finish Drying

In March 1940 issue of INDUSTRIAL FINISHING, on page 26, there appears a notation as follows: "Experimenting on systems for drying of wood finishes during the past decade has made possible the perfected system of today." We would appreciate your advising us the address of the manufacturer of the drying system.—P. G. & E.

The item was sent in by Geo. Koch Sons, Inc., Evansville, Ind., and we understood that it refers to their equipment.—ED.

Shutter Awnings

We are very much interested in the article in February issue of INDUSTRIAL FINISHING, entitled "Finishing Shutter Awnings," beginning on page 68. We would appreciate it if you will send us the names and addresses of several manufacturers of these shutters, as we have some prospects who could use something of this kind. As spring is almost here, we would appreciate it if you

will attend to this at once.—B. Hardwood Mfg. Co.

On page 68 of one of your recent issues of INDUSTRIAL FINISHING, you show Shutter Awnings by W. R. Allen. We wonder if these awnings are being manufactured and, if so, would you kindly give us the name and address of the manufacturer? We have clients interested in purchasing same.—O. B. Co.

The manufacturer is Hader Johnson, Inc., 1709 Standard Ave., Glendale, Calif.—ED.

Luminous Paint

We desire to obtain a luminous paint to be applied on the inside of polystyrene, the luminosity to show through the clear polystyrene material. This is to be used for house numbers and street signs.

We are one of the largest manufacturers in the country of parts made from polystyrene, plexiglas and clear acetates. We are endeavoring to secure a luminous paint that will stand up under weather conditions and also give a practical number of hours of illumination at night. If there is any information you can give us along these lines, we would appreciate it very much.—P. T. Co.

Could you let me have the names and addresses of firms that manufacture a radio-active luminous coating for dials on watches and instrument panels?—N. D. Finishes.

Names of manufacturers or luminous paints have been submitted. —ED.

Process Color; Bake 200°F.

We have an inquiry for a Brewster Green Medium process color, to be used on 18-gauge metal signs. The signs will be baked at about 200°F. If you can suggest a source of supply for such a material it will be appreciated.—A. C. Co. (Paint Distributors).

Portable Electric Sander

In the December issue of INDUSTRIAL FINISHING, you publish an inquiry regarding pneumatic sanders, see page 9. You mention in a footnote that two advertisers in INDUSTRIAL FINISHING can supply such machines. We should, however, have

Flo-Bak SYNTHETIC BAKING ENAMELS

A HIGH SPEED BAKING LINE OF FINISHES IN CLEAR AND COLORS

Clear Flo-Bak Y536

A clear synthetic finish, absolutely water white. Specifically formulated for adhesion to copper and brass. Ideally suited for hardware specialties and other items requiring a clear protective finish.

1. **Tough finish.**
2. **High lustre.**
3. **Easy flowing.**
4. **Excellent retention of gloss.**
5. **Highly resistant to acid, alkali and alcohol.**

Baking schedules are adjustable to most finishing procedures:
300° F. for 10 minutes
275° F. for 20 minutes

Further information and samples will be furnished on request.

LACQUERS THINNERS ENAMELS METALIZED FINISHES SYNTHETICS

UNITED LACQUER MFG. CORP.

General Offices and Factory: Linden, New Jersey

GILCO POLISH

A Superior Greaseless Polish

Made to produce highest possible lustre on varnish and lacquer finished furniture.

Free from grease, oil or wax. Does not streak or fingerprint.

May be hand polished or machine buffed.

Now being used by leading furniture and radio cabinet manufacturers.

Write for trial sample.

THE GILBERT SPRUANCE CO.

RICHMOND & TIOGA STS.

PHILADELPHIA, PA.

SPRUANCE QUALITY

Specialists in the manufacture of wood and metal finishing products since 1907.

a machine exactly the same, except that it should be electrically and not pneumatically driven. We should be much obliged if you could let us have any information you possess regarding such a machine. — S.-T. Ltd., Zurich, Switzerland.

Iridescent Finish

In the February issue, page 83, I notice the two letters of O. R. Inc. (Specialists in jewelry items) regarding iridescent finishes. I have produced those finishes on beads and indestructible pearls. I have also succeeded in putting the finish on table cloth. If the concern is still interested in those finishes, will you please place them in touch with me? If the items they have in mind can be finished that way, I might be interested in doing the finishing for them.—A. R. F.

Infra-red Ray Baking

We are interested in infra-red ray bake finishing equipment for possible use in the production finishing of small metal-cases for radios. — X. Mfg. Co.

Pearl Essence

Please furnish us with the names of dealers distributing pearl essence paint.—A. B. Co. "Art Tubes Make a Good Product Look Better."

Polishing Machines

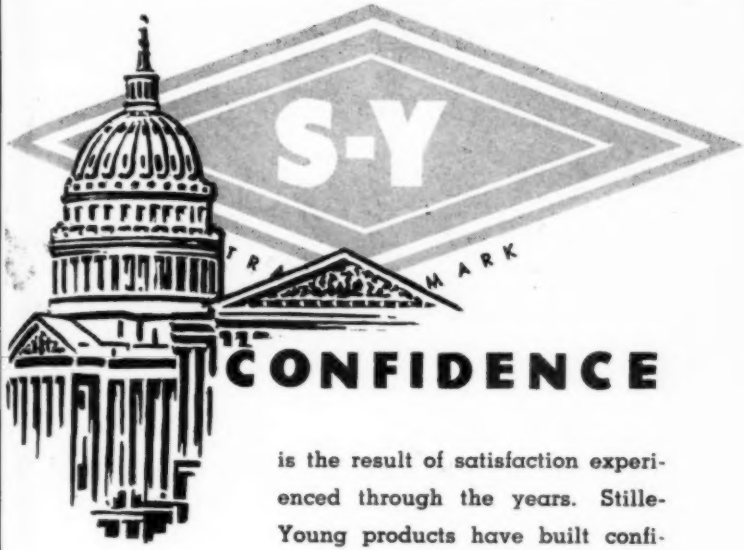
Please tell us who manufactures light polishing machines for use in polishing the finish on fabric-covered aircraft.—R. Aviation Corp.

Gold Leaf, P. D. Q.

Kindly send us all the available information on application of gold leaf, or send us a book in reference to same. C. O. D., Special Delivery, Air Mail.—F. S. S. (Custom Built Furniture).

Spray Booth Coating

Please send us the names of some manufacturers of material to be used to coat the interiors of spray booths in order that they may be easily cleaned. We know of one source, but consider that they want too much for their product:—H. F. Co.



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is the result of satisfaction experienced through the years. Stille-Young products have built confidence in the industry by building for the future as well as the present. Every Stille-Young product is formulated for durability, economy and lasting beauty. Profit by the confidence of the trade—specify and use Stille-Young Finishes throughout.

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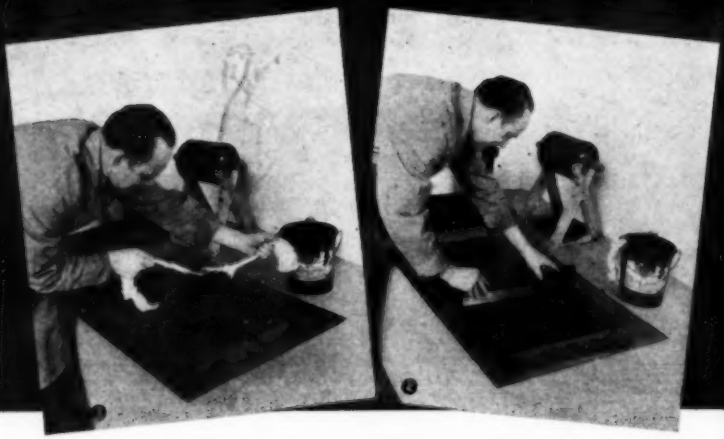


Graining from an Etched

BY JAKE SNYDER
Wood Reproductions Division of
Ault & Wiborg Corporation

WOOD AND MARBLE grain reproduction by the offset gravure printing process—from an inked, etched copper plate and soft printing roller—is used to produce decorative effects on the smooth surfaces of plain wood, wallboard, paper, composition material, sheet metal and other materials. Probably its widest application is in the metal furniture field. Other lines include office partitions, fixtures, air-conditioning cabinets, radiator covers and automobile instrument boards. On some work the flat sheets of metal are grained and then formed or pressed into shapes afterward. On other work the parts are grained after they have been formed into shapes — sometimes after the products have been completely fabricated.

Offset gravure printing presses have been devised for the printing of hairbrushes, furniture, and other products. The flat plate method, as herein described, is most commonly used on metal panels and similar flat surfaces.

Equipment Needed for Wood Graining

As in all printing processes, the plate carrying the design or pattern to be reproduced is most important. Two types of plates are being used—etched copper plates and electrotypes. Of screens used there are three types; 1) the Rembrandt type, 2) the dust screen, and 3) the inverted halftone type. The preparation of the

Metal Plate

1) Straining ink through cheesecloth.

2) Scraping surplus ink off the etched copper graining plate.

3) Rolling the offset or printing roller carefully over the inked plate to pick up the inked impression from the plate.

4) Transferring the inked impression to color-coated metal panels; or, in other words, printing the wood grain on metal with the offset or printing roller.

5) Cleaning the printing roller for a repetition of the graining process.

wood or marble panels to be photographed is a subject by itself —one which I will not discuss here. I will confine this article to the reproduction of the natural grained design on the surfaces of the sheets, panels or products to be grained for decorative effect.

Manufacturers of wood graining plates supply the user, in addition to the plate itself, with all the necessary equipment for transferring the impression from the plate to the surface to be grained. This equipment usually includes a combination doctor

blade and ink scraper, take-off composition roller, pads, and a cleaning machine for cleaning the printing rollers.

The layout of a wood graining department should be left to an expert familiar with the requirements of this work. Once a plant is properly set up to do this work, production becomes a routine matter. No special skill is required to make a transfer of the wood grain design.

Preparing the Surface to be Grained

A ground coat is first applied over the surface to be grained. This ground coat may be applied by spraying, dipping, roller-coating, or flowing on the color. It must be free from dust and festoons, uniform in thickness, and perfectly smooth. Most of the varnish manufacturers are prepared to furnish materials especially formulated for this purpose. Opinions differ as to the degree of gloss that a ground coat should have, but experience shows that a ground coat that is slightly porous and possessing but little gloss gives the best results. The ground coat can be an air-drying or baking material. Baking materials usually give the best results.

Makeready for Graining

One thinks of makeready in connection with printing-press work, but it is a factor to be considered in wood-grain reproduction also. In graining metal cabinets, the middle of the panel to be grained has a tendency to sag under pressure of the transfer roller. To offset this, engineers have devised braces to keep the entire surface of the panel level, allowing the transfer roller to roll evenly over the surface, and eliminating later patching or retouching.

Inking the Graining Plate

At one end of each graining plate there is a flat level surface (perhaps 6 or 8-in. wide) which is not engraved. This is the ink well space. At this point the operator does his straining, mixing, and thinning of inks so that he will not mar or scratch the etched surface of the plate. Graining inks are made to special formulas, usually by the same manufacturer who supplies the ground-coat material.

Before applying the ink, care should be taken to clean the copper plate thoroughly by wiping it carefully with a clean soft cloth and benzine or gasoline. The graining ink is not liquid; it is about the consistency of soft grease or semi-soft butter. But it must be strained to remove any small lumps or specks that may be in it. The usual method is to strain it through a double thickness of cheesecloth.

Straining and Spreading the Ink

Over the ink space at the end of the graining plate, spread a double thickness of cheesecloth about 18-in. square. Use a spatula or wide blade knife to transfer a batch of ink from the ink container to the middle of this square of cheesecloth. Transfer enough to make several impressions, so that your straining operation will not have to be repeated so often. Fold the cloth, first from one edge and then from the opposite edge, over the soft paste ink, leaving the other two edges

free so you can grasp these free ends; lift the folded ink a little above the ink space and twist the cheesecloth in opposite directions, see illustration No. 1. This forces the paste ink through the cheesecloth and allows it to drop on the ink space at the end of the graining place. It is dropped or spread along the width of the plate at this point so it can be readily spread over the entire plate by using the inking roller.

We next see that the doctor blade and ink roller are clean and that the roller moves freely in its bearings. The roller is then placed on the ink space, back of the undistributed ink, with the blade clear of the plate surface and facing the open end of the plate. The ink is rolled onto the printing surface, thoroughly covering it. The blade is next allowed to come down on the surface of the plate at the far end—on the 1½-in. margin end.

Allowing the blade to rest on the plate, the operator grasps the handle of the doctor blade and lifts the roller off the surface of the plate until the blade is perpendicular. With one motion he then draws the blade back to the ink space, scraping it over the surface of the plate so it pushes all of the surplus ink back to the inking space at the opposite end of the plate, see illustration No. 2. This leaves the surface of the etched plate inked perfectly.

Transferring the Impression

The composition transfer roller must be absolutely clean and free from dust and lint. It is washed clean after every impression by letting it rotate freely over a pair of driven rollers, one of which revolves in a shallow pan of gasoline. The gasoline washed roller is then carefully wiped clean and dry with a soft cloth, as shown in illustration No. 5. The printing roller is then placed on the forward or small margin end of the plate. Applying a slight pressure, the operator moves it toward the ink space, allowing it to roll freely and not slide, taking up as much imprint as is necessary to cover the surface to be grained, see illustration No. 3. Care should be taken to avoid double printing the roller.

The operator next lifts the roller and transfers the print to the panel or cabinet surface by rolling it forward with just enough pressure to transfer the ink evenly, see illustration No. 4. The roller is started at the edge of the surface to be grained and continued to the end of the space. The grained surface will need to be examined for any possible slight defects; if any are found, they will have to be touched up. If the transfer is not entirely satisfactory the surface can be washed with benzine and another print made. A little practice and experience soon makes for perfect work.

Finishing the Grained Surface

The grained panel or cabinet is next air-dried or baked. Baking gives the best results and it is usually best to follow the specifications of the varnish manufacturer as to baking time and temperatures. If an air-dry ground coat has been used and the graining ink is air-dried, the surface should then receive two coats of spraying lacquer, the first coat a thin mist and the second a heavier coat. If baking facilities are available for drying the

graining inks it is possible to use a varnish finish over the graining, if desired. Some concerns bake both the ground coat and graining ink; then they follow with two coats of clear lacquer. The top finish can be whatever the manufacturer wants—a two-coat egg-shell gloss, a two-coat flat, or more coats rubbed and polished.

The final appearance of the graining can be affected by the color of the ground coat and the color of the graining inks. Many variations can be obtained by changing these two colors.

Experience With Hot Lacquer

IN THE radio cabinet industry a good durable high-bodied finish is required—not only from the standpoint of appearance, but also for wear and weather resistance. This is usually produced with two or three coats of lacquer over a coat of sealer, which had been our method until six weeks ago. It has been fairly satisfactory, but not quite up to the standard we wanted, since we were trying to do away with as much open pore effect as possible.

We installed a hot lacquer system after a demonstration, and have had very satisfactory results since. Our system does not involve the use of high-solids lacquer, such as most firms are experimenting with, but is a 27% solid type which is slowed up slightly with a blend of retarding thinners.

We heat this lacquer in an electrically-heated automatically-controlled hot-water type heater, to 140°F., which lowers the viscosity so that it breaks up in very good shape, with 70-lbs. of air pressure at the gun. This is then sprayed on as just a good medium coat and dried 45 minutes. Then the surface is recoated with a fairly heavy coat. Due to the heat and slow thinners, the material dries slower than most lacquers, but it flows out beautifully and is dust free in approximately eight minutes. No hot box is required to dry this lacquer coating, but it should be air-dried 15 hours before rubbing.

We rub the finished surface with No. 320 wetordry sandpaper, lubricating or wetting the abrasive paper with a soap and water solution. Then we follow with polishing compound to bring it up to a high polish.

This lacquer has withstood our own hot and cold tests from 0° to 275°F., without showing any signs of checking, and with only a negligible amount of shrinkage. It does a 100% better job of closing pores and gives a much better appearance than we have been able to produce with any cold type lacquers that we have ever used.—HAROLD DEAN, Finishing Foreman.

Free Book on Solvent Recovery

A new 32-page illustrated booklet describes and illustrates an economical and efficient process of recovering solvents which are ordinarily wasted in large quantities in connection with cleaning and finishing operations. Solvent recovery is explained in the first chapter. Other chapters discuss the equipment and operation of solvent recovery plants and describe typical applications in various industries. Information is also given regarding operating expense and the savings that these plants can effect.

Copies of this valuable booklet may be obtained from Carbide and Carbon Chemicals Corp., 30 E. 42nd St., New York, N. Y.

"I make the suggestion that you publish an article in INDUSTRIAL FINISHING *on the effect of humidity on abrasive paper and cloth that is used in the woodworking industry. I have never seen anything on this subject . . . but I am convinced that much money could be saved by every woodworking plant if the abrasive paper and cloth, especially that used in the cabinet and finishing departments, had the correct amount of moisture in it."*—J. M. (Furn. Co. P. A.)

Condition of Sandpaper

FOR BEST RESULTS IN THE FINISHING ROOM

IN ORDER TO TAP some fountains of information on the above subject, the EDITOR referred copies of J. M.'s letter to a manufacturer of abrasive paper and cloth, and to a few finishing foremen in wood furniture factories. Their comments, suggestions and recommendations are interesting and informative. The first one, which immediately follows, is from Minnesota Mining & Manufacturing Co. of St. Paul, Minn.:

We have made considerable effort to make a thorough study of the effect of various temperature and relative humidity conditions on the performance of surface-coated abrasives, but we must admit that our data on this subject, at the present time, is not as complete as it could be. We are enclosing a graph which clearly illustrates the effect of the variations in cutting efficiency of gluebond surface-coated abrasives, resulting from variations in relative humidity conditions at a constant temperature of 70°F. This curve, we believe, will more or less answer Mr. J. M.'s questions, but as we have stated, our study has not been completed yet to cover the results of variations in cutting efficiency under variable relative humidity conditions in a wide range of constant temperatures.

Relative Humidity

Air Temperature

. . . .

Moisture Content

Of the Sandpaper

On the other hand, we have developed information, as the result of checking storage conditions and conditions under which abrasives are used, that the ideal temperature and relative humidity conditions are definitely covered in what might be termed the optimum range in temperature and relative humidity conditions for gluebond abrasive applications. The limits of the optimum range would be bounded by temperatures of 70° to 80°F., with

35% to 45% relative humidity conditions at the lower temperatures, with a reduction of moisture to 25% to 33% relative humidity in the higher temperature range. However, we want to emphasize the fact that a user of coated abrasive materials should not expect the maximum cutting efficiency from a coated abrasive product that has been stored ideally but used under conditions which would not come under the range of optimum performance as herein outlined.

High Humidity and Temperature Harmful to Sandpaper

As an example: Abrasives that have been stored properly but used under conditions of 60% to 80% relative humidity, at temperatures varying from 85° to 90°F., would definitely not produce their maximum performance in cutting efficiency and life. The poor performance of the abrasives used under these conditions would be due to the fact that gluebond coated abrasives will come to equilibrium with the conditions under which they are being used, in a relatively short period of time.

We hope this information will be sufficient for you to use in drawing up an article on this subject, as we are highly in agreement with your theory that there are many more of your readers who have a keen interest in this subject. We want to thank you for giving us this opportunity of presenting our views on this subject and regret that we cannot give you more detailed and specific information at this time.—M. M. & M. Co. (by G. E. Winton)

Store Sandpaper in a Humidified Room

There are two things I have found very useful in this respect:

1) Common experience, especially in winter when heat is in the factory. Build a small room

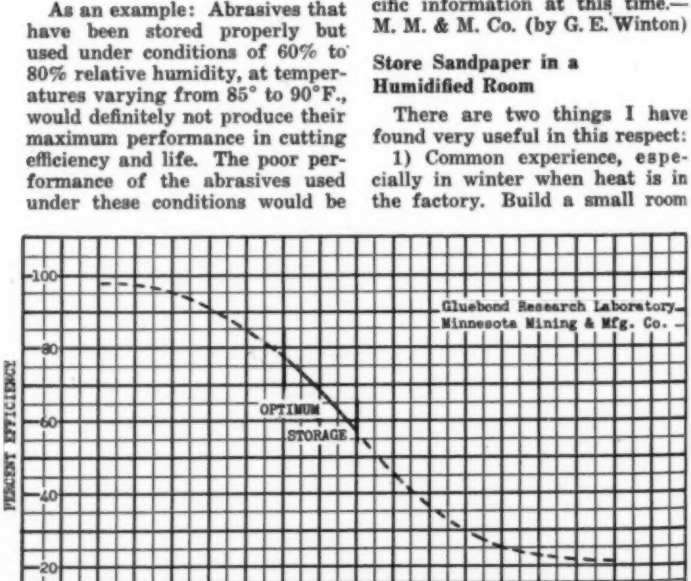


Chart showing efficiency variation of gluebond abrasives with respect to relative humidity at 70°F. From Gluebond Research Laboratory of Minn. Mining & Mfg. Co.

without heat; then place an outside ventilator, so the room will have the same temperature and humidity as the outdoors. It's the dry-factory air, without much humidity, that warps the paper.

2) If a small room can't be built, then place open pans of water on the floor, and keep the abrasive paper and abrasive belts on racks in this room. Also, store sandpaper in this room until it absorbs the humidity of the atmosphere. Take out only one day's supply at a time. Be sure to keep the pans supplied with water, as this is the important thing.

These suggestions seem to help us with our sandpaper problem, and I hope this can be of some help to you. — GEO. E. PURDON. (New York)

Condition Sandpaper in Humidity Chamber

In regard to this proposition, I have an inexpensive but simple method of keeping the proper amount of humidity in sandpaper that we use in the finishing room. I have found that by keeping the proper amount of humidity in the paper, I can keep the paper more soft and flexible, thus enabling the workmen to extend their sanding down into the low places of the surfaces they are working on. This is especially the case when sanding molding and turnings. Properly "humidified" sandpaper is tougher and bends more easily, whereas sandpaper that is stiff and dry will break and tear easily, thus shortening its useful life.

Some of the sandpaper manufacturers have, within the last two years, developed a very flexible-back sandpaper. One company calls their product "Flexback," and it is much more flexible than some of the sandpapers we formerly used. However, even these sandpapers will become hard and dry if allowed to remain for several weeks or months in an excessively dry heated room, and they will need proper conditioning with humidity to restore their flexibility.

To properly humidify the sandpaper that we use in our finishing room, we cut it to size and place it in what we call a humidifying chamber. This humidifying chamber could be made any size to suit one's requirements. Our's is simply a 5-gallon paint or varnish pail with a perforated false bottom added. This perforated bottom can be made from an extra can lid—one trimmed around the edges to easily fit inside the pail. Several holes are punched through it and it is fitted with four wooden legs about 6-in. long, these legs supporting it and holding it 6-in. above the real bottom of the container. We pour water into the container but keep the water level at least 2-in. below the false perforated bottom. Then we place our cut sandpaper on the false bottom and put on the cover.

Care must be taken to prevent any water from actually touching the sandpaper, as this would soften the glue that holds abrasive grits to the sandpaper and thereby cause these abrasive grits to rub off easily.

I have checked the relative humidity in the container and have found it to be about 40%. I think my method could be successfully employed for conditioning sandpaper that is used for hand sanding in both the finishing room

and cabinet room. I am sure that having the proper amount of moisture in the sandpaper does make it work better and also prolongs its life, which of course saves the company money.—H. W. CHESTER. (N. Carolina)

Relative Humidity, 35% to 45%; Moisture Content, 7% to 11%

In woodworking plants making furniture and similar articles for interior use, a relative humidity of 35% to 45% should be maintained. This will maintain, in the wood, a moisture content of from 6% to 8%, which is generally regarded as an ideal average for strength of glue joints, drying finishes, etc., with a minimum of shrinkage or swelling when put into actual service. I would say that the abrasive paper and cloth should also have a moisture content of at least 6% to 8%. This should be the low limit, as abrasive cloth and paper become very brittle when they are too dry. The abrasive grains and adhesive break easily from over-dry cloth and paper backing. I would suggest that these abrasive papers be stored in a place (for example, a special cabinet) with controlled humidity and kept at about 10% to 12% moisture content. Then issue only enough abrasive paper for one day's use at a time—OWEN R. MYERS. (Illinois)

Avoid Excesses; Be Sensible

It had never occurred to me that the problem was sufficiently urgent to cause great concern. The so-called "dry backed" papers have a glue bond and should, of course, be treated accordingly—that is, with the care given to the storage of any glue-bonded article. Manufacturers of sandpaper always advise its storage in a cool dry place. Sandpaper storage cannot be too cool, or too dry if cool. On the contrary, excessive or prolonged heat, such as storage near radiators or steam pipes can age and brittle the glue bond materially. Any degree of excess moisture, with access to glue-bond paper, can ruin the bond too. While less sensitive to moisture and heat conditions than the glue-bond paper, the so-called "waterproof" papers should not be subjected to prolonged heat conditions either.

Aside from the heat and moisture precautions, no coated paper should be used very cold, as from an unheated warehouse in winter. It should be allowed to assume room temperature to avoid undue cracking of the bond and the formation of sharp corners which will cause scratching.

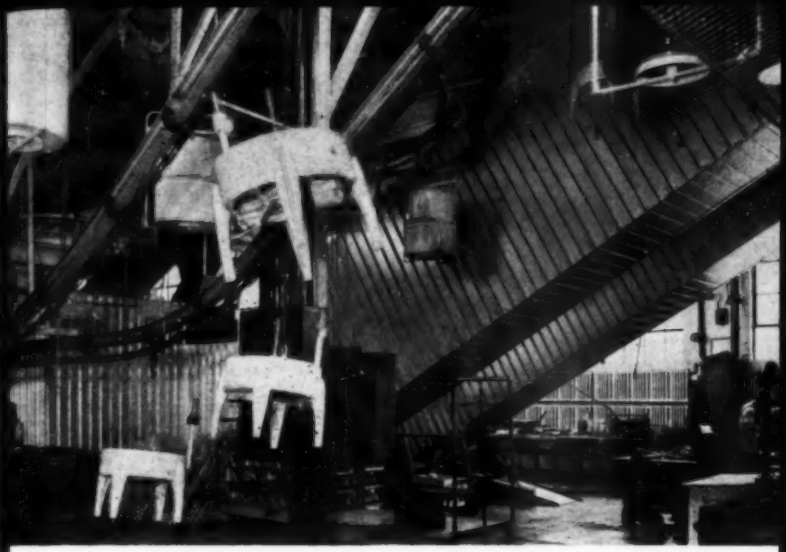
To sum up the story: Sandpaper will be found to remain in a perfectly usable state indefinitely if kept in an atmosphere of not over 75°F. and within a relative humidity range of 40% to 60%. —W. T. SMITH. (New Jersey)

Hilo Finishes at Heating & Ventilating Show

The Hilo Varnish Corp., who maintained an exhibitor's booth at the International Heating & Ventilating Exposition in Cleveland, Ohio, January 22 to 26, reports as follows on the trend in decorative and protective coatings:

Gloss and semi-gloss, smooth, tough, quick-bake type finishes continue their popularity, and were on much of the equipment exhibited.

Rough one-coat wrinkle finishes were in evidence too—dull and shiny, coarse and smooth. The finishes of greatest interest were the smooth 2-tone hammered effect, and the still newer smooth gloss spatter. Both are 2-spray, one-bake finishes. The attention of the visitors to the Hilo booth was centered mostly in these two types of decorative finishes.



Operation of Conveyor Ovens

BY WILLARD SEEMAN

ONE OF THE most important trends in organic finishing in recent years has been the change to shorter baking schedules. Not so long ago baking periods of one or more hours were common procedure and even all-day and overnight baking were practiced. Today all that is changed. Baking schedules are now measured in minutes rather than hours. As a matter of fact, any bake of much more than one hour's duration is considered a long schedule.

This reduction in time of baking has been made possible only through the development of the newer types of finishing materials. Without their use, there would be none of the advantages of greater production and lower costs which accompany any change to shorter production schedules.

However, in connection with short and ultra-short baking schedules, one point must be born in mind; that is the fact that short-bake finishing materials are much more critical with respect to baking time and temperature than were some of the older types of formulations. In other words, to consistently obtain the fine results which are now possible, there can be no great variation in either the time or the temperature.

It is imperative that the baking conditions, once they have been

determined, be rigidly maintained. To do otherwise may easily result in under-baking or over- baking, color differences and other ills which will reduce, if not nullify, whatever advantages a short schedule might have.

Starts and Stops Affect The Baking Schedule

Of particular importance in maintaining fixed baking schedules is the operation of conveyor ovens. A casual study will indicate that less difficulty should be expected with this type of equipment than with box ovens. In general this is true. On the other hand, it is also true that unless conveyor ovens are carefully operated, a part of the production can be improperly baked. This refers specifically to the period at the beginning of the working day.

For example, let us assume that a conveyor oven is shut down at the end of the shift when the finishers and the oven loaders and unloaders stop work. This leaves the oven fully loaded. Of the parts in the oven, those few just ready to be unloaded have received their full bake, while those just placed on the conveyor have received none. In between, there is a full range of slightly, partly, and nearly baked parts.

On the following day, or when work is next begun, one of two plans may be followed in starting the oven. However, neither procedure will produce the same bake for the load in the oven as it would receive later in the day when the conveyor has been running for a while. These plans are: 1) turn on the heat and start the conveyor at the beginning of the shift; 2) turn on the heat at some previous time, so that the temperature is up to baking heat when work begins, at which time the conveyor it started.

Explaining some of the technique in operating conveyor ovens so as to obtain a uniform baking of the finish on all products, and at the same time compensate for starts after stops at noon and overnight.

Of the two, the latter plan is probably the better, inasmuch as only the parts in the oven do not receive the standard continuous bake. If the first plan is followed, not only are the parts in the oven not properly baked but also all subsequent parts which are loaded, until the temperature comes to the required point, are under-baked. In any event, neither plan is a good one.

There is a procedure, however, that may be followed to eliminate the difficulties which attend leaving the oven fully loaded. With the exception of a short period at the beginning of the plan, there is no extra or overtime labor required and, once it is in operation, constant baking conditions are assured throughout the whole of any working shift. A specific example follows:

Different Procedure Suggested

A particular conveyor oven is scheduled for a temperature of 300°F., and for a cycle of one hour from the point where the parts are placed on the conveyor to the point where they are unloaded. Heretofore, the procedure has been to shut down the oven with its full load at the end of the shift. On the last day before the new plan

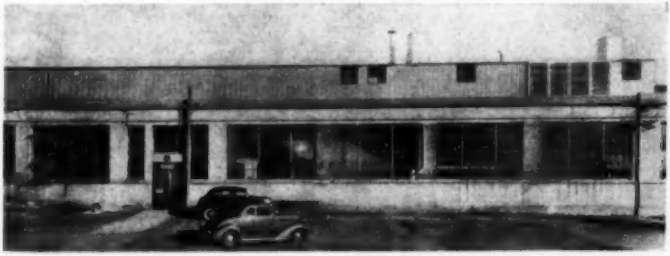
is to be started the finishers and oven-loaders stop work at the regular hour. The unloaders, however, remain until the oven is completely emptied. The overtime involved for this is one hour—the time necessary for the last piece placed on the conveyor to pass through the oven. When the oven is empty the conveyor and the heat are shut off.

Before the next shift begins the empty oven is started (both conveyor and heat) in sufficient time so that when the finishers and loaders report for work, the temperature is up and the conveyor is ready to receive work. Assume that the shift begins at 7 o'clock. Parts placed on the conveyor at that time do not reach the exit of the oven until 8 o'clock, since passage through the oven requires one hour.

The unloaders now report for work. Assume, also, that the regular lunch hour is from 12 o'clock noon to 1 o'clock. The last part loaded on the conveyor at 12 o'clock will emerge at 1 o'clock, and the first part that is placed on the conveyor at 1 o'clock will emerge at 2 o'clock. In other words, no work is coming out of the oven between 1 o'clock and 2 o'clock. The unloaders take their lunch during this period. If an 8-hour shift is maintained, the last part goes into the oven at 4 o'clock and, as usual, the finishers and loaders stop work. However, one hour beyond 4 o'clock must be spent in unloading the oven, therefore the unloaders are on duty until 5 o'clock.

Involves No Extra Labor

On careful analysis it will be seen that no more time has been spent by either the finishers, the loaders or the unloaders, than when the oven was shut down fully when work was to cease. Each one of the men has worked 8 hours. As before, the oven has produced for 8 hours. The only



An exterior view of a conveyor oven located on a factory roof. Inside the windows can be seen the enclosed ramp which connects the spray room to the oven. The oven itself begins where the ramp passes through the roof. The remainder of the enclosure on the roof, to the right of the oven, houses the oven-heating equipment, spray-booth exhaust fans, and air-supply system for spray booths. Screens at the right hand side of the picture cover openings for one-half of the air supply; similar screens are located on the opposite side of the enclosure. Other parts of this equipment include a bonderizing system, prime-coat spray booths and dip tanks, prime-coat oven and transportation conveyors. There are assembly operations between the prime coats and the final coat. The equipment illustrated is used only for final coating, which is all sprayed. Photograph furnished through courtesy of The R. C. Mahon Co.

difference has been in moving the unloaders' shift back by one hour, that is starting them one hour later. It works satisfactorily.

The procedure just outlined can be maintained regardless of the length of the bake, the production required of the oven, or any other factors. If it is followed, all parts will receive an identical bake and there will be none of the difficulties usually encountered when baking schedules are not followed exactly.

Supplementary Notes

EDITOR'S NOTE: *Additional comments on this subject by Mr. W. Herdlein, with the Industrial Division of The R. C. Mahon Co., follow:*

In most of the instances with which we are familiar, a time and temperature schedule is worked out with the paint manufacturer, so that the oven need not be emptied during shut-down periods. This is generally accomplished by shutting off the oven heaters somewhat in advance of the time the conveyor is stopped.

There is no question but that with a simple spraying and baking operation, the most foolproof procedure is to empty the oven, even though this does not permit of uniform lunch hours and starting and quitting times for the operators of the equipment. In a number of instances, there are intermediate operations taking place on the same conveyor on which the parts are cleaned, sprayed and baked, or the parts are taken from the chain, worked into assemblies, and replaced for final coats. As an example, this is particularly true in some of the plants manufacturing domestic washing machines. We find that the procedure of not emptying the oven is followed in such other industries as manufacturers of tractors and combines.

We have no fault to find with the procedure you have described under the subheading of "Different Procedure Suggested", but we should also like to see you leave in the reader's mind the thought that if emptying the oven each night and noon hour does not suit his production schedule, he can undoubtedly work out another procedure which will perhaps not be theoretically correct, but one that has been found to be entirely practical and is being used more generally in those organizations whose finishing operations are more or less tied in with assemblies and other work before and after finishing.

Possibly you could follow, in a later issue, with one of the more complicated procedures in which it is necessary to let the oven stand loaded all night. I do not know whether you could work this single item into an entire article, but I should like to see it referred to in the present copy.

Free Book about Spraying

A 32-page handbook divided into five chapters and illustrated with 100 carefully made drawings gives you quick and accurate information about spray guns, spray-gun parts and the correct technique of hand spraying; material containers; hose and hose connections; air transformers and condensers, and air compressors.

The contents are arranged conveniently in Question and Answer form, with 144 common questions about spray equipment and the answers to same. This book is really valuable wherever spray painting equipment is used. It is copyrighted in 1940 by The DeVilbiss Co., Toledo, Ohio. Although it has printed on the title page, "Price: 25 cents," single copies will be sent free to readers of INDUSTRIAL FINISHING magazine. Arrangements for getting copies in bulk can be made by writing DeVilbiss.

Small Wood Products

FINISHED BY SPRAYING, TUMBLING AND DIPPING

BY L. G. THOMPSON
Foreman of Finishing Dept.,
Newton & Thompson Mfg. Co.

As Told to
FRANCIS A. WESTBROOK

Spray-painting small wooden souvenirs.

THE Newton & Thompson Mfg. Co., Brandon, Vermont, manufacturers wooden toys, souvenirs and novelties which retail at an average price of about 25c per item. In addition to this the company specializes in the production of wooden handles for paint brushes. A few other items are also manufactured for regular customers.

All of the articles in the line are small and made of wood—mostly white birch, with a small amount of maple and beech. More than 50% of the products receive a lacquer or varnish finish. It is characteristic of the business that most of these products are made in large quantities. For instance, the finishing of 25,000 paint brush handles is considered only a small day's work on the one item.

The problem of finishing such large quantities of inexpensive items has received careful attention and has been developed to a high degree of efficiency. Several methods of finishing are employed, depending on the type of product and the kind of finish required.

Tumble Finishing

All of the round products, such as toy ten pins, croquet mallets, beads, golf tees, etc., which are given one over-all color coat, are finished in tumbling barrels. These barrels are 22-in. in diameter and 34-in. long. Round barrels are being replaced with hexagon-shaped tumblers because it has been found that the products are tumbled better in the latter. There is a separate barrel for

For more effective tumble finishing, barrels of hexagon cross-section are preferred.

each color. Each barrel is filled about three-quarters full with the articles to be finished, after which a non-toxic tumbling enamel is added.

The length of time required for the actual tumbling, the amount of finishing material to put in the barrel, and the correct speed of the barrel, are fine points that must be worked out to suit shop conditions and the particular products being finished.

Drying; Striping; Dipping

Following the tumbling of the first coat, the products are removed from the barrel and placed on racks that have wire screen bottoms. These racks are 5-in. deep, 24-in. wide and 30-in. long. The racks are stacked, one on top of the other, and drying is permitted to continue overnight. Next day a second coat is applied in the same way. This also is followed by overnight air-drying. The products are then carefully placed in boxes and stored until ready to assemble or pack for shipment.

Some of the higher priced items receive an added coat of clear varnish or lacquer which is also applied by tumbling. Naturally this gives the color coat more luster and depth, imparting added attractiveness to the products.

Certain round items, such as tops, are decorated with one or more stripes of another color. In some instances there may be several stripes of different colors. These stripes are applied, after tumbling, by placing the product or part on a spindle and applying the color with a small striping brush of suitable size while the object turns. A commercial striping enamel is used for this work.

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Samples on request

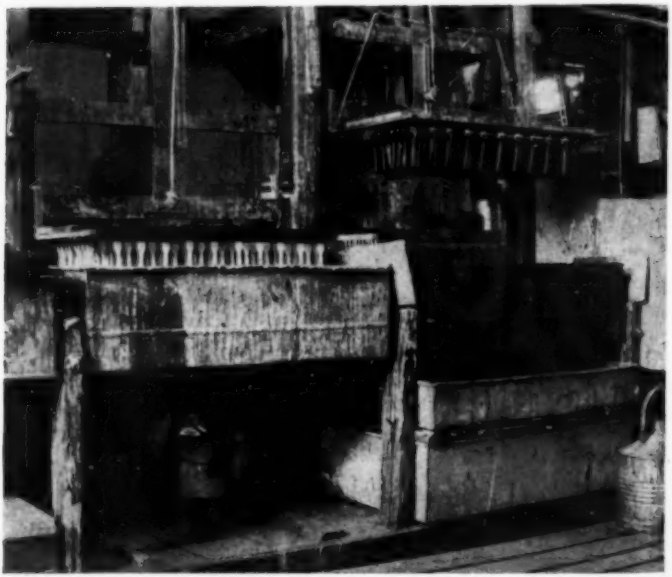
The largest volume of finishing here is done by dipping. Dip-finished products include paint brush handles and all flat work that is shaped to permit dipping. All of these articles receive at least three coats, including an undercoat, color coat and top coat.

Colored and clear lacquers are used in almost all cases, although occasional orders specify a synthetic or oil enamel. In this work it is important to have the viscosity of the material just right for the job. This is learned through experience and experimenting. Tests are made frequently with a No. 2 Zahn viscosimeter.

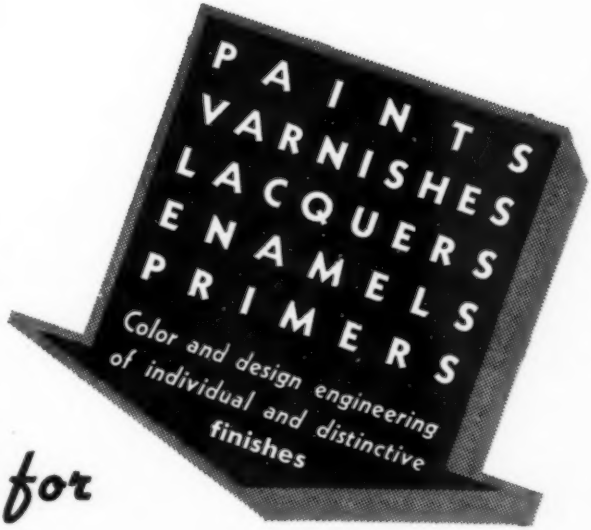
The undercoat is white with extra pigment added to fill the pores of the wood and give a smooth surface for the color coat. The top coat is a clear lacquer to give body, depth and gloss. Some items are dip-finished to show two colors; some brush handles have as many as three colors which, of course, means extra dipping. Some dips are diagonal, which is provided for by means of specially designed forms that hold the handles at the proper angle with the level surface of material in the dipping tank.

All of the items to be dipped are placed on special spring brass nails, in forms or pin boards holding 26, 45, 50 and 74 units. The parts to be dipped are pressed onto the sharp points of nails by driving them on with leather-faced wooden mallets.

The two dipping machines are geared to lift dipped articles from



Small paint brush handles, held by sharp points in pin boards, are dipped in multiple.



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the tank at the rate of 2½-in. per minute. When workmen remove the loaded pin boards from the machine, they quickly turn them so that the dipped articles stick up instead of down. This turning is done with a quick movement so the bead doesn't have a chance to flow back irregularly and thereby produce a visible run. The small surplus material (which otherwise would form a bead) gradually spreads out evenly over the surface and becomes part of the film of practically uniform thickness. The lacquer coating dries rapidly enough to permit of recoating within an hour.

Loaded pin boards are placed on racks large enough to hold from 1300 to 2200 handles, depending on their size. These racks are moved to and from the dipping station by means of lift trucks. A steam-heated drying room is available for use in handling rush orders, but generally the dip-coated parts are left on the racks to air-dry overnight after the top coat has been applied.

Tanks for Dipping

Each dipping machine has four tanks. One is for the undercoat; the second is for the color coat which, of course, is varied according to the work going through; the third is for the top coat. The fourth tank of one machine is filled with sealer—a very thin lacquer to apply as a first coat to items that do not get a color coat, but which receive two coats of clear finishing lacquer. The preliminary sealer coat is also applied to those parts or products that have considerable end grain, to prevent them from absorbing a large percentage of the first coat of finishing lacquer, when applied.

The fourth tank of the other dipping machine contains varnish for the finishing of those items on which this type of material is specified. By having all undercoats of the same color, and all top coats of clear lacquer, the finishing process is simplified, economized and accelerated.

Spray Finishing

Articles that are of such size, shape or design that they can not be coated satisfactorily by either tumbling or dipping, are finished by spraying. A well ventilated spray booth and modern spray guns are provided for this work. Clear, color and stain finishes are applied in this way.

Most of the work to be sprayed is stuck on nails on forms, in much the same way as for dipping, except that care is taken to position the pieces far enough apart to make spraying as easy as possible, that is, so that one piece will not shield its neighbor from the spray. Some of the work is set on narrow slats—in cases where one side or the bottom doesn't need to be covered, and where this placement of the pieces is easier and quicker.

The company also has bench facilities for a considerable amount of spray decorating, including all stencil work, of which there is a considerable amount.

A special machine has been developed and placed in service for painting dowels of various sizes. It can coat dowels at the rate of 100-ft. per minute, using dye-colored shellac.

The dipping room has been carefully fireproofed and equipped with fire doors and a ventilating system which changes the air every four minutes. Electric lights are of the explosion-proof type.

Many practical finishers of my acquaintance do not know the advantages of a stripping tank, or if they do know of it, they cannot sell the idea to the management.

Too many superintendents are concerned only with their immediate production requirements, without considering tangent problems.

I hope my article will open up new thoughts for them.

James A. Bede
Foreman Finisher

Value of a Stripping Tank

FOR USE IN CONNECTION WITH METAL FINISHING

ONE OF THE problems confronting the foreman in a metal finishing department is that of stripping off enamel or other finish coatings from metal surfaces. It is necessary to strip rejected painted parts, and also some of the equipment used in the finishing operations, such as hooks, rods, screens, racks, paint buckets and other paraphanalia. To clean these parts manually is an expensive messy job. The use of a suitable stripping compound, in a tank, does a complete thorough job, and does it economically.

One of the most common uses for the stripping solution is to remove finishing material from articles rejected by the inspectors. It is generally more satisfactory to completely remove the finishing material and refinish the article than to remove part of the finish and patch up an area that hasn't passed inspection.

Stripping is a fast, economical, thorough method of removing paint and cleaning the metal, preparatory to repainting the piece properly. While it may be inconvenient or impractical to strip large heavy objects, the general run of fabricated stampings and small castings can be readily handled in a stripping tank.

Easy way to Fix Rejects Results in Better Spraying

Aside from the direct advantage gained through easy, fast and economical stripping, there is a further and, in the author's opinion, a much greater benefit. It is an intangible, psychological benefit in that it removes from the spray men a fearful dread of causing rejects because of sags.

The author has, on various occasions, observed paint departments where the cardinal rule was that the sprayers must not make a sag. The sags that were occasionally made had caused such annoying repair jobs that the foreman was constantly and strenuously guarding against them. The result was that the sprayers acquired a cramped over-cautious style of working, instead of going ahead with a free and easy swing that makes for fast work. Instead of fearlessly spraying on a full wet coat that would flow out smooth like a sheet of glass, they cautiously "dusted" on the finish. Not only was their work slow, but it was of poor quality. I have met men with 10 to 15 years experience as sprayers, but they were not first class sprayers because of this subconscious fear.

When these companies installed strip tanks, the occasional sags lost their annoying importance; they were regarded as irrelevant minor mishaps, and the men soon learned to concentrate on the task at hand, instead of worrying about the possible slips. As a result there was a noticeable increase in the quality and quantity of each sprayer's output. When the men did learn to acquire that rapid fearless style of spraying, they sagged their work less than formerly. The over-cautious faltering bicycle rider is more apt to fall than the one who rides ahead boldly.

Different Types of Strip Tanks and Solutions

There are many designs and sizes of strip tanks. They range all the way from elaborate conveyorized units to a simple discarded paint drum equipped with some simple heating device, but they all have several things in common. The stripping solution must be brought to a boiling point, or very close to it. Also, there must be a separate rinse tank where the parts can be rinsed in clean clear water.

Several different makes of stripping compounds are on the market —some in liquid form, others in powdered form. Those in powdered form dissolve readily in water. The stripping solution retains its strength for months, with just a slight addition to compensate for drag-out. The chemical composition of the stripping compound, and the ratio of mixture with water, for best results, will depend upon the nature of the finish to be stripped. Generally, baked enamels are harder to strip than air-dry enamels.

Some firms utilize the stripping tank for a dual purpose; they use it for degreasing, using a regular cleaner compound. They allow their rejected stampings to accumulate and then strip them all at once. The one drawback to this procedure is that the solution then must be strained and filtered or thrown away. Once the cleaner solution becomes contaminated from stripping, it is unsuited for metal cleaning.

If at any time the workman who operates the strip tank should happen to splash some of the hot solution on himself, he should immediately rinse it off in clear water. Generally that is sufficient, but for an aggravated case he should bathe the splashed area with vinegar; this immediately neutralizes all of the chemicals and prevents harm to skin.

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There are many firms who could very advantageously install a stripping tank. After a few months operation, they would look back and wonder how they were able to operate as long as they did without having the advantages of a strip tank available.

Supplementary Suggestions

The following supplementary paragraphs are included by request of the Editor:

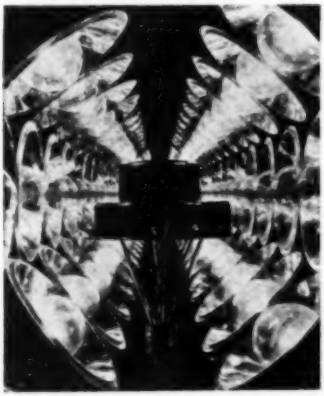
The stripping tank is generally made of iron or steel, but not of galvanized metal. The sides can be insulated to provide better heat retention, although this isn't necessary.

The solution can be heated by steam coils placed within the tank (preferably along one side) or by a gas burner positioned at or near the bottom. When in operation the tank bottom soon becomes heavily covered with sludge, therefore heat must be applied above the lowest part of the bottom, or it would soon become ineffective, the heavy sludge acting as a thick layer of insulation.

Parts being stripped can be suspended by hooks or mesh baskets, depending on their size and shape.

Aluminum, zinc, white metal and allied metals can not be safely placed in a tank containing a caustic stripping solution. However, special compounds are on the market for removing paint from these metals.

One practical way to clean a strip tank is to allow the contents to settle during the week end. Drain out and clean the rinse tank; then transfer the stripping solution to the clean tank, being careful to avoid disturbing the sludge on the bottom. Both the stripping and rinse tanks should be piped to drain into the sewer system.



Freshly painted automotive parts moving by conveyor through a drying tunnel of GE infra-red drying lamps and reflectors. Photo courtesy of General Electric Co.

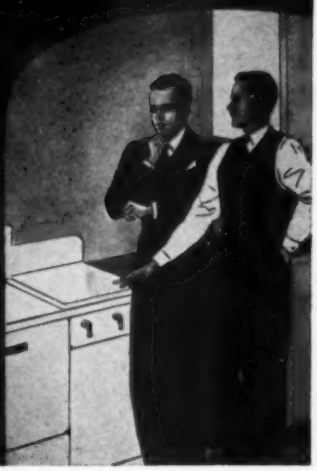
Alkyd Resin Finishes

MORE than $500,000 has been spent in research in the development of variously modified alkyd resins, now popular for the finish of furniture, mechanical refrigerators and many other wooden and metal surfaces, it was declared by Dr. C. M. A. Stine, vice-president of E. I. du Pont de Nemours & Co., in a review on the occasion of his receiving the Perkin Medal of the Society of Chemical Industry.

"This new type of finish has to a considerable degree displaced porcelain finishes. This shift from porcelain to alkyd resin finishes has resulted in a marked decrease in cost of production, which in turn is reflected in reduced prices

(Continued on page 38)

Better FINISHES FOR THE STOVE INDUSTRY MEANS BETTER FINISHES *for* EVERYONE



FINISHES for the stove industry require maximum heat resistance, chip resistance, rust protection, 1-coat coverage, mar-resisting smoothness, greater *eye and sales floor appeal,* and economy of application. Present-day stove industry Black Finishing, Hi-Bake White, Quick-Baking 1-coat Colored Enamels, are far superior to finishes of a few years ago.

Countless manufacturers of products other than stoves, are also profiting by this unusual experience in the development of more attractive and more durable finishes. If you feel that *your* product might be improved by the use of such "Production Proven" Finishes, we invite you to ask about our interesting demonstration plan. Write for further information.

BERRY BROTHERS

Industrial Varnishes • Enamels • Lacquers

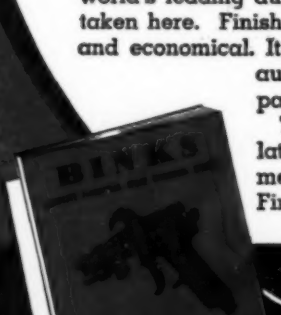
DETROIT, MICHIGAN WALKERVILLE, ONTARIO

WHERE FINISH

. . . . you will find

Here is a large and recent installation of BINKS spray painting equipment. This time it's in the production line of one of the world's leading automobile manufacturers. No chances can be taken here. Finishing equipment must be efficient . . . fast . . . and economical. It is precisely for these reasons that so many automobile manufacturers rely on BINKS spray painting equipment.

The Dynaprecipitor spray booths in this installation will save thousands of dollars and innumerable hours of labor for this manufacturer. Finishes that would adhere to the back wall, the



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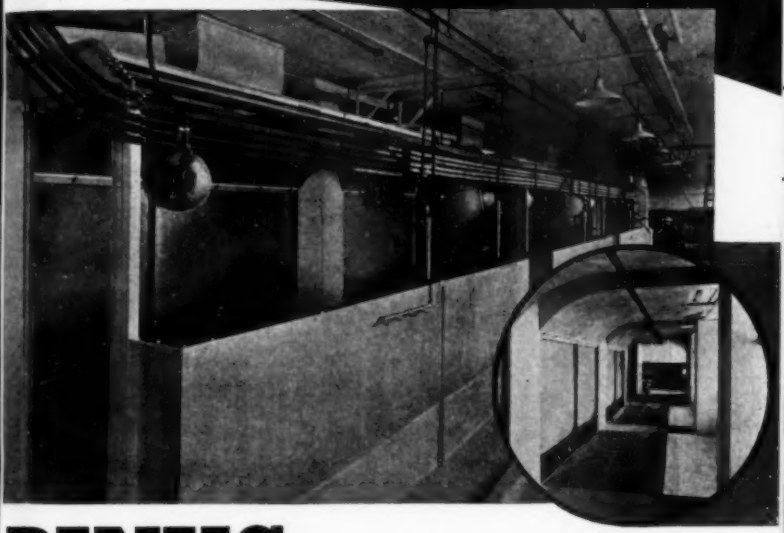
COUNTS ...



BINKS *equipment*

fans and the stacks of an ordinary spray booth are quickly washed out of the exhaust air. Fire and explosion hazards are reduced and working conditions made much more healthful.

Like most BINKS installations the one illustrated is tailor-made. It was designed for a specific job after a complete engineering survey of the work to be accomplished. This accounts for the economy and high efficiency that make BINKS equipment the favorite where finish counts. No matter how big or small your finishing problem is, BINKS engineers will gladly survey your plant and suggest the type of equipment you need for utmost economy, speed and performance

BINKS MANUFACTURING COMPANY

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to the ultimate consumer. Alkyd resin finishes of the type used on refrigerators are characterized by a high degree of toughness, resistance to grease and stains, and by excellent color retention. Related alkyd resin finishes are widely used for interior woodwork and for certain specialty outdoor applications, metal-protective paints in particular. Alkyd resin finishes are also being used on several types of automobiles, both passenger cars and motor trucks, and on ships and railway cars.

"One of the principal intermediates used in making the alkyd resin finishes is phthalic anhydride, made by the oxidation of naphthalene. Whereas phthalic anhydride was more or less a laboratory curiosity in 1917, selling for about $6.00 a pound, some 43,000,000 lbs. were made in 1937, and the estimated production for 1939 was of the order of 60,000,000 lbs. Currently the price of this important coal-tar intermediate, the principal outlets for which are in the manufacture of alkyd resins and certain types of dyes, is around 15 cents a pound. Within recent years a new and greatly improved method has been developed for the preparation of phthalic anhydride, involving oxidation of naphthalene in the vapor phase, and it is largely due to this improved method that alkyd resin finishes are available today at prices which enable them to compete with the so-called orthodox finishes.

"I have taken a personal interest in this new type of finish, since much of the poineering work on alkyd resin finishes was done under my direction. Some 15 years ago, when my attention was first called to resins made by the General Electric Co., through the interaction of polyhydric alcohols such as glycerol, and polybasic acids such as phthalic anhydride, it occurred to me that resins of this type might find application in nitrocellulose lacquers to replace imported natural resins such as damar. It likewise occurred to us, about the same time, that resins of the same general type, suitable for use in paints and varnishes, might be made through the simultaneous reaction of a polyhydric alcohol, a polybasic acid, and a monobasic fatty acid derived from drying oils such as linseed or Chinawood oil. A program for research was accordingly mapped out, and about 1925 or 1926 work was started. First and last, we spent more than $500,000 on research directed to the development of variously modified alkyd resins, but I am happy to say that the fruits of this work have been such that we have no occasion to regret spending this rather large sum."

Red Lead Bulletin

A new brochure recently produced on Microlead, "the new highly dispersive red lead," contains interesting and valuable information, along with many attractive illustrations. It has 28 pages 5¼x10¼-in., is bound between heavy paper covers in orange and aluminum. Copies can be obtained from the Technical Service Library (Emergency Address), "Liskeard," Tupwood Lane, Caterham, Surrey, ENGLAND.

16-Page Mixer Catalog

Much interesting information and many striking illustrations are included in the new 16-page 2-color catalog of Mixing Equipment Co., Inc., 1090 Garson Ave., Rochester, N. Y. It is really a technical reference book of value—and is free to readers of INDUSTRIAL FINISHING magazine.

Mask

TWO TONE JOBS WITH

SCOTCH MASKING TAPE

¶ You can depend upon Scotch Masking Tape for complete protection during spraying and drying periods.

¶ Correct adhesive tack prevents the tape from lifting under spray pressure and results in clean, sharp color separation—no rough edges.

¶ The strong backing assures fast, easy removal—leaving no residue for after cleanup.

¶ If you are not already one of the many regular users, why not try Scotch Masking Tape on your next two tone job.

WRITE FOR YOUR SAMPLE ROLL TODAY

Made and Patented in U. S. A. by

MINNESOTA MINING & MFG. COMPANY

SAINT PAUL MINNESOTA

The Desire To Serve The Ability To Produce

Canadian Manufacturers and Distributors, CANADIAN-DUREX ABRASIVES, LTD., 134 Pearl St., Toronto, Ont.

QUIZ.

with ANSW

1 *Do you know how to cut your material costs in furniture finishing as much as 30%?*

2 *Do you know how to cut* at least *70% of your finishing time from sealer to packer?*

3 *Do the qualities themselves of this finish meet your standards?*

» **DULUX gives you a combination you've always wanted—a finish with the flow and build of varnish; a finish with the speed and quality of lacquer.**

* **YOU CAN CHECK** *these facts easily. Let us* [illegible] *you mor*
Just write to E. I. du Pont de Nemours & Co. [illegible]*nc.), Fi*

DU PONT

DULUX

FULFILLING AGAIN THE DU PONT PLEDGE OF BETT[illegible] THING

FOR USERS OF LACQUER ON FURNITURE!

SWERS *you can check**

1 ANSWER: YES. Use the new DULUX Finish for furniture. Because of the unusual build of DULUX, you need only *one* coat, instead of the usual two coats of lacquers. This way, material savings up to 30% are possible.

2 ANSWER: YES. Use DULUX. Because it dries quickly at elevated temperatures—2 hours at 150°—DULUX gives you a 5½-7½-hour finishing schedule from sealer to packer . . . instead of the usual 29-43-hour schedule for varnish and the 22-28-hour schedule for lacquer. Also saves time because DULUX is so easy to rub.

3 ANSWER: YES. The ingredients in DULUX are of the finest quality money can buy. They are formulated to give a clear, beautiful film with excellent depth of appearance. It is resistant to cold-cracking, scratching, printing, marring, water and alcohol.

Let us [illegible] you more about the savings that DULUX offers.
& Co. Inc.), Finishes Division, Wilmington, Delaware.

LUX FOR FURNITURE

ETTER THINGS FOR BETTER LIVING THROUGH CHEMISTRY

37% SOLIDS

at the gun

"SPRAYED COLD"

NOROY **LACQUER W-1055**

[THE ONLY CLEAR ALCOHOL PROOF GLOSS WOOD LACQUER WITH 37% SOLIDS SPRAYED COLD.]

1. A specially developed production finish for the FURNITURE INDUSTRY.
2. One coat finish sprayed cold produces a high build, beautiful alcohol proof finish.
3. Saves Time — Labor — Money.
4. Cold Check Durability Test by U. S. Testing Co., Inc., Hoboken, N. J., (Report No. 12958 — April 1st, 1940) showed W-1055 Lacquer to be resistant through 15 cycles.
5. NOROY LACQUER W-1055 is guaranteed in quality and uniformity. Attractively priced.

You can not afford to miss the opportunity of trying our W-1055 Lacquer when it offers such obvious advantages.

● Now in production use by leading manufacturers.

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RUDD LACQUER CORPORATION

127 MAIDEN LANE NEW YORK, N. Y.

Factory: Rahway, N. J.

WHY AND HOW I MAINTAIN A

Clean Finishing Room

BY R. E. CASEY

Foreman finisher tells you why a finishing room should be clean and he explains in detail how to keep it clean. He directs particular attention to the filling, staining and spraying operations and includes suggestions about: 1) Repairing rejects promptly; 2) white walls and good lighting; 3) marked floors to show aisles, all work areas and storage spaces.

THE inspiring sight of a clean finishing room, with real production work going through, immediately stamps the foreman as a progressive energetic individual. Even a casual visitor who knows anything about finishing will appraise that foreman as a man who:

1) Is interested in his work.

2) Is able to maintain discipline among his men.

3) Has the interest of his company in mind to the end that his department is not a bad fire risk.

4) Knows that cleanliness is stimulating to the morale of his workmen, and that they can produce more and better work in a clean room.

This type of foreman will have clean workmen with clean working habits. At various convenient points near work stations he will have metal trash cans with covers so the men can promptly dispose of their waste materials and supplies, throwing same into these safe containers instead of on the floor or on or under a bench, table, or shelf where this waste material may cause the starting of a fire or add fuel to one that has already started.

If any tobacco spitters are in the crew, small boxes or kegs containing sawdust should be provided to serve as cuspidors for them. Spitting on the floor should be forbidden.

Clean Filling and Staining Work Stations

Let's take a look in the filler room. I have seen accumulations of used filler several inches deep on the floor in some filler rooms. It is difficult to push a cabinet over such an uneven floor without damaging it in some way. The presence of this old caked filler is unnecessary.

Starting with a clean floor, prepare the space every morning before the filler crew starts to work. You can scatter sawdust all around the filler container and also scatter some over all the space where the men work. Then

in the late afternoon, when the filler work is completed, it will be comparatively easy to clean up the sawdust and wasted filler, so you will have a clean floor to start with on the following day.

Let us now look into a clean, well-organized staining room. There should be a long bench (about 2-ft. high and 2-ft. wide) on which to place all of the stain crocks. This bench should set up against the wall. For every stain you should have a sign tacked up behind each crock, naming the color of the stain therein, so the stain man can not make a mistake in using the stains. All water-stain brushes should be washed clean after the day's work is completed, and put into a can or jar where they will hang suspended in water just deep enough to cover the brush bristles. Then the men will have clean soft brushes to start with in the morning.

Spray Booths and Auxiliary Equipment

Suppose now we take a look at the spray booths. Some spray men will work every day for a month without cleaning their spray booths—unless the foreman gets after them about it. One of the practical ways to keep a spray booth clean is to mask it with paper or some other temporary coating that can be easily and quickly removed when it becomes loaded with spray dust.

A common method is to apply a film of cheap cup grease to the interior surfaces of the booth and then press sheets of wrapping paper against the greased surfaces. The film of grease will hold the paper in position. When the paper becomes loaded with accumulations of spent spray it can be easily stripped off. After one covering of paper is peeled off, it should be replaced immediately with a layer of clean paper. Of course, this grease and paper coating will burn rapidly if it ever catches afire. Regular spray booth coatings are on the market and can be used safely and economically. The Editor can refer you to the manufacturers.

It is also important for the spray man to be thorough and careful in cleaning his spray hose. I know of one instance where a spray operator accidently set fire to the finishing room while cleaning the fluid hose. The entire plant burned down. The outside vapor-proof bulb had been temporarily removed from an electric light where he was working. The hose slipped out of his hands and struck the regular thin incandescent bulb hard enough to break it. The operator was using gasoline to clean the hose. You can imagine the rest.

I find it a good plan to have a man clean the rooms after the day's work is done. He should check up on the different rooms, turn out the lights, close all the windows, check the compressor, and drain out all the water from the air tank.

Repairs to Damaged Goods

Now, let's spend a few minutes on repairs to damaged products. Every furniture finishing room needs a cabinet repair man and a burn-in man. Suppose an employe breaks the leg of some piece of furniture, or finds a loose place in the wood that needs repairing. The case can be immediately transferred to the repair man or burn-in man and fixed up. Then it is ready for staining and touch-

ing up, after which it can go through the regular routine finishing process with the other work. I have seen damaged furniture piled up in corners of the finishing room, and it makes an unsightly appearance . . . . produces an unfavorable impression upon everyone who enters the room.

Light; Working Space

Another thing that is important in every finishing room is to have plenty of good light. The walls, ceiling and posts should be coated with a mill white or some white oil paint; posts should be painted a dark color from the floor up to about 4-ft., as the white paint is so easily soiled at and near the bottoms of the posts. Still another excellent idea is to paint broad lines on the floor to indicate the trucking aisles, work stations and storage space—and then keep all the aisles clear at all times so there will be plenty of room to push the cases through with reasonable speed and safety.

I find that by carrying out the suggestions and recommendations given in this article, my department turns out clean quality work with less breakage and fewer rejects—and the fire hazard is reduced to a minimum. In fact, during my 25 years' experience as foreman in different factories, there has been only one small fire in my department.

This picture shows how Ault & Wiborg can labels have been restyled to give the firm name more prominence and to improve the legibility of the design and the appearance of the cans. The labels are a bright blue with strong yellow lettering. The effect is strikingly attractive.

Using Wood Filler

FILLERS ARE needed and used for filling the open pores and tiny crevices of open-grain woods such as mahogany, walnut and oak. In close-grained wood like maple, cherry and redwood, the pores are very small; the wood fibers are closely woven.

Fillers are of two kinds, paste and liquid. Paste fillers are generally used on open-grain woods, while the liquid fillers are used on close-grained woods.

We mix our fillers to a creamy consistency for mahogany. It seems to fill the pores better than the heavy paste; also, it saves time.

The purpose served by filler is to "level" the surface of the wood and prevent the varnish or lacquer from sinking in and giving a pitted or rippled effect. These effects are apt to remain, even though several coats of varnish or lacquer are put on, unless the undercoats are rubbed down very close. It is cheaper and quicker to use filler than the other way.

Close-grained wood is often finished without filler. In the finishing of certain types of oak furniture, such as fumed, weathered, antique, and Jacobean oak, the finisher never uses filler.

Chemist at work in a corner of the control laboratory at the High Point, N. C., plant.

at High Point, N. C.

Contributing to the BETTER wood and metal finishes

By co-ordinating the efforts of two staffs of experienced technicians and experts we are constantly building into LILLY FINISHES, as a matter of course, many qualities frequently emphasized as unusual—alcohol resistance, print resistance, flow, adhesion, clarity, toughness, mar-proofness, etc.—you'll find all these (and many more) in all LILLY FINISHES.

THE LILLY COMPANY

HIGH POINT, N. C.

Here is a view in the grinding laboratory at Indianapolis.

at Indianapolis, Indiana

the development of these two modern LILLY plants

Through the combined facilities of these two modern plants, (Indianapolis, Ind. and High Point, N. C.) constant research and development work is being carried on and raw materials and finished products are carefully checked and tested to insure modern and practical finishes of uniform quality. Our technical and service staffs of both LILLY plants are at your service.

LILLY VARNISH COMPANY

INDIANAPOLIS, IND.

Great Britain and Europe: Apply Jenson & Nicholson Laboratories, Stratford, London, England

Filler should be applied (brushed or sprayed) lengthwise of the grain of the wood; then it should be brushed crosswise with a rather stubby brush. As soon as it starts to set up flat you should begin wiping it off crosswise with burlap, manila or horsehair. This crosswise wiping cuts the surplus filler off, leaving the wood pores and crevices well filled. The last operation is to wipe it carefully with the grain with clean soft rags.

One pound of paste filler will cover about 40-sq.ft. of surface, while one gallon of liquid filler will cover from 300 to 400-sq.ft. Success in filling depends largely upon mixing or tempering the filler with proper thinner liquids. Some fillers are hard to mix and are very difficult to use, but when a finisher becomes accustomed to using a certain kind of material, it works easier and does much better work.

The typical filler used by house painters is generally tempered to save time. It contains very little oil and it sets flat ready to wipe in two to five minutes. It sets so hard in 30 minutes, usually, that it can not be wiped off. The furniture finisher tempers this filler so it sets ready to wipe in 15 or 20 minutes, yet it can be wiped any time up to within one hour or two after brushing. After being wiped down, fillers are ready to finish when they have dried 8 to 12 hours, depending upon weather conditions. — A. DEAN LANG.

Flock continues to be one of the most popular type finishes. Airplane manufacturers are beginning to use flock in the interiors of aircraft. Automobile manufacturers are already using same as a finish for their built-in trunks. Bottle manufacturers are supplying bottles flocked in various colors for the wine and liquor trade. Many other industries are finding new uses for flock coatings daily.

Fluorescent Lamp Catalog

Catalog No. 110, published by Day-Brite Lighting, Inc., 5401 Bulwer Ave., St. Louis, Mo., illustrates, describes and gives prices on a variety of lighting fixtures for fluorescent lamps, to be used wherever efficient lighting is required. The catalog contains 24 pages 8½x10-in., and is bound between heavy paper covers attractively printed in three colors.

Propeller Fan Catalog

A new catalog, No. 12, of 32 pages and cover, has just been issued by the Hartzell Propeller Fan Co., of Piqua, Ohio.

The new catalog illustrates and describes the entire line of Hartzell Propeller-type fans and blowers, and gives complete air-delivery tables on each of them. Air deliveries given are the results of tests according to the Standard Test Code of the Propeller Fan Manufacturers' Association.

Many new sizes and models are contained in the new catalog. The "Tear-Drop" propeller line has been enlarged and developed so that it now includes fans and blowers of all sizes and types. This propeller, patented by Hartzell, is a recent development of the Hartzell engineering laboratories. It is said to operate more quietly and at lower speeds than the ordinary fan.

Among new models shown in the catalog are fans with the motor entirely out of the air stream, allowing use in locations where excessive abrasive or corrosive elements in the air-stream might effect the motor, or in localities where industrial codes prohibit the use of a fan with motor in the air stream. A new blower, also with motor outside of the air stream, is also included in the catalog. Intended for installations where back pressures are encountered, the new blower is designed for the same general uses as the fan.

Hartzell air-moving equipment is sold through sales-engineering offices located in principal cities throughout the country.

Paasche Engineering Victories . . .
That Save Costly Production Dollars

The development and perfection of these Paasche Airbrush Units has been made possible by thirty-six years of pioneering progress . . . through research and practice . . . of an organization always daring to do what was considered impossible of accomplishment.

Paasche original Two-Color and Three-Color Airbrush has proved its worth in many industries. Applies different materials from each nozzle. Chemists are now using this unit to develop finishes and practices that will be standard five years hence.

First cup airbrush to apply heated materials. Ideal for temperatures up to 350° F. Many of the world's largest industries have found this electrically heated air and material airbrush especially suited for laboratory testing and development work.

Paasche Type FF ¾" High Production Flock Gun — a Flock Gun that does not clog. Excells for fastest application from flock pressure tank or mechanical feed hopper. May be had with different nozzles to meet special needs.

End guesswork in your striping operations with a striper that really works. Ideal for difficult groove striping. May be used to stripe many grooves at one time, even as many as 20 grooves at once. Send us sample of your job and we'll duplicate it at lower operating costs.

"Low Cost Finishes"—is the theme song of the type BU High Production Airbrush —a pace setter in all industries. Satisfied users everywhere. Savings up to 60 percent reported by customers. The standard for quality airfinishing.

Paasche Type F600 Automatic Airbrush. Universally selected by those who want to save MORE material, save MORE time, save MORE labor in production airfinishing. Once you try a Paasche Automatic Airbrush, you will never be satisfied with less.

If these airbrush specialties suggest Paasche can help you, the experience of this organization is at your service. . . . Send for Quick Facts on How to Obtain Low Cost Finishes and add beauty to your products.

Profit with Paasche

Paasche Airbrush Co 1917 Diversey Parkway Chicago, Ill.

In Canada—A. R. Williams My. Co., Toronto; Omer De Serres, Ltd., Montreal

Zinc-Coated Sheets

In your January 1940 issue of INDUSTRIAL FINISHING, on page 88, reference is made to zinc-coated sheets to take and retain baked synthetic enamels. You mention the fact that these sheets have been given a phosphate treatment which affords a neutral base for the finish.

Will you please send us the references necessary to obtain further information regarding this process? If there are any patents concerned, will you please include the patent numbers?—T. S. Co.

The author of the Guest Editorial, to which you refer, advises us that the zinc-coated metal sheets he had in mind are furnished to his company by the American Rolling Mill Co., Middletown, Ohio. He states that these sheets are "galvanized steel paint grip" and are used by his company in the manufacture of refrigerator cases. The metal is given one coat of high-bake white synthetic and is very satisfactory. For further information, he refers you to Dr. Anson Hays, Director of Research for the American Rolling Mill Co.—ED.

Decal Trouble

On the advice of your New York office, with whom I talked recently, I am writing to ask if you can give me some assistance.

My problem concerns imported decorative decalcomanias, with which I am having considerable trouble. I am transferring them on wooden coasters and trays. As an adhesive, I find it necessary to use ordinary mucilage, as the surplus can be removed with water after removing the paper.

The first trouble is the bubbles between the transferred decalcomania and the surface of the coaster, which is lacquered. With these I have had some success by pricking the bubbles with a needle, but the chief difficulty comes when I spray clear lacquer over the design and, as there are three coats applied, I lose many of the designs due to "lifting," and in many cases there is more or less splitting or cracking.

These conditions do not apply to the metallic decalcomanias, such as coats of arms or to Japanese groups with black and gold colors.

If you can offer any suggestions that might help me to overcome these difficulties, I will be extremely grateful.—F. H. S.

We suggest that you try an adhesive other than mucilage, preferably something that is supplied or recommended by manufacturers of decals. Some concerns use a quick-drying rubbing varnish.

After spreading a thin uniform film of adhesive over the proper side of the decal, let it stand until it becomes stiffly tacky—so tacky you can touch it with your finger tips and lift the decal into the air.

It is the practice of some work-

Questions Answers

A Furniture Finish that loves the briny sea

A prominent furniture manufacturer scoffed when we demonstrated the customary salt-spray test on our new "500" line of lacquer finishes. He said plain brine doesn't contain the iodine and mineral salts which cause finishing troubles in the sea air of the Atlantic Coast.

So we brought a drum of real sea water from New York Harbor. We ran our "500" test panels in a forced-spray bath at 100 degrees for 93 hours—until they were completely saturated. When they dried, the surface was covered with deposits of sea-salt. But the lacquer finish was unimpaired.

Was the manufacturer convinced? He was. He has adopted the "500" Line for his entire finishing operations.

594 LACQUER SEALER **595 GLOSS LACQUER** **596 FLAT LACQUER**

Free spraying, smooth flowing, clear rubbing. Tough, resist marring, printing, alcohol, water, hot oil, and extreme temperature changes.

Why not let the Glidden man tell you about the new "500" Line?

THE GLIDDEN COMPANY
National Headquarters, Cleveland, Ohio
Factories or Branches in Principal Cities

TIME-TESTED
GLIDDEN PRODUCTS CARRY THIS FAMOUS MARK OF QUALITY

GLIDDEN
Everywhere — for Everything

men to wet the surface that is to receive the decal with clean water before applying the decal. Place the tacky decal in position and then apply pressure at the center first. Stroke it from the center to the outer edges in all directions to drive out an entrapped air which otherwise would cause bubbles, blisters or pimples later. Apply plenty of reasonable pressure to smooth out the decal and press it close to the surface being decorated. A small rubber roller is generally used for applying pressure to the decal.

Next, the workman peels off the backing paper, starting at one edge or corner. On some large decals there is an extra sheet of thin tissue paper between the heavy backing paper and the decal itself. When this is the case, the workman may again apply more pressure with a rubber roller to the tissue covered decal, after which he will moisten the tissue paper gently with a sponge or wet cloth and peel it off, exposing the full-color decal to view. The exposed face of the decal itself will need a light washing if it happens to be one of the kind that has starch or some other washable substance between the face of the decal and the paper covering.

If some adhesive has been pressed out beyond the edges of the decal, this can be removed by carefully washing or wiping it with a soft cloth wet with benzine or a mixture of clean gasoline and water, followed by a light washing with clean water. If, after all of these precautions, some blisters still appear, one method of releasing the entrapped air is to press a piece of sharp grit clean abrasive paper against the face of the decal. The sharp grits will puncture the blisters and release the entrapped air.

A reasonable time must be allowed for the adhesive to set and become dry before any clear protective coat of lacquer or synthetic is applied over the decal. —ED.

Material Tampering May Cause Trouble

After reading Mr. W. K. Perdue's article about "Custom Metal Finishing" in the March issue, there are some things on which I don't agree with him, particularly the "playing around with lacquers," as he calls it. I would advise him to not add anything to his lacquers unless he has a knowledge of their formulation. Anything he may add to them, other than what the formula called for, might cut the quality of the lacquer and the finish as well. The job might look all right when it leaves the shop but the question is, how will it stand up?

The manufacturer probably spent weeks perfecting a grade of lacquer for his particular product. Before leaving the laboratory, it had to stand the fingernail test, acid test, and had to be mar-proof.

If a finisher adds something to the lacquer, other than what is called for in its formulation, and if something goes wrong with the finish, the manufacturer who made the lacquer is held to blame and more than likely loses a customer. This has happened in many cases. For example: A finisher mixed water in his oil stain and no one seemed to know what had gone wrong. However, when

Allure

Call it allure, come-hither, eye-appeal, or whatever you like . . . it's the something that adorns, enriches and attracts . . . and to sum up that something in one word . . . it's finish!

Whether it be smart woman, meticulous man or outstanding commercial product, finish always contributes in no small measure to the ultimate effect.

For the purpose of giving your commercial products the allure that will make them more sales-worthy we offer the services of our creative studio without cost or obligation.

Write us about your products and let us give you complete details regarding our facilities and experience in creating finishes.

ROCKFORD VARNISH COMPANY

Manufacturers of Finishing Materials

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NO TAMPERING WITH QUALITY

Kindly mention INDUSTRIAL FINISHING when writing advertisers

they complained to the manufacturer of the stain, the latter got busy and after several days of checking and testing at the laboratory, found the stain to be okay. Then they went to the factory where the stain was being used and started checking. They traced the trouble to the finisher. He had been using his own idea of adding something to the product.

Another finisher tried using gasoline to thin lacquer. I could go on and mention several cases. When trouble like this comes up it often causes a big expense to the paint manufacturer, yet the paint company is always ready to serve its customers and be of help in any way possible.

Mr. Perdue states that he found, that by adding a little linseed oil, it did no harm other than slow up the drying. *Linseed oil will not only slow up the drying but will soften the finish and cut down its resistance to the many abuses it will have to stand.*

Almost any finisher of long experience knows that linseed oil will mix with lacquer. In fact, some lacquers are shaded and tinted with colors ground in linseed oil. However, it is always best to use flushed colors ground in special resins for lacquers. Too much oil color will cause the lacquer to go out of solution. Oil colors settle out and fade. Any color that contains mineral spirits should not be used in a lacquer for metal. If one must use linseed oil, he should be sure of the grade, as there is more than one grade of linseed oil on the market.

In reference to Mr. Perdue's statement that a finisher can find out something by playing around with his material—something that the technicians know but won't pass out promiscously, I'm sure he is wrong in his idea here. The firm from which he buys his lacquers, or any other paint manufacturer, has a staff of technicians who stand ready to enlighten him on anything he might want to know about lacquers. They will even go so far as to send a man to his plant to help him work out any finishing problem he has. The paint manufacturer spends thousands of dollars every year trying to improve his product and in giving out information. Anyone can get a book on the formulation of lacquers, so that there would be no reason for the technicians keeping anything a secret.

I was a foreman finisher for years but little did I realize, until I went to work in a paint factory, that there were so many different kinds of lacquer and that each was made for a different finish and purpose; nor did I know all the time the chemist puts in perfecting and matching the color for a certain finish. Sometimes it takes weeks, and

---

We are expanding this company to include a furniture department and I have joined the company's staff to manage this department. Heretofore I always received Industrial Finishing and would like to get it at this address now. I feel that it is a valuable aid in this business and we could not purchase materials or run a finishing room without its help.—W.T.R. (In charge of newly established furniture department).

Something New in a Metal Finish!

VITRA-CARLITE
HAMMERKRAFT

Gives a Hammered Effect—Easily Cleaned

● Well adapted for use on rough or porous metals, air-conditioning units, circulatory heaters, boiler jackets, vending machines and other uses where an economical, durable and "sales-appealing" finish is desirable.

Vitra-Carlite HAMMERKRAFT is made in Vitra-Carlite quality—well known for its excellent durability, adhesion, flexibility and heat-resistance. Like Vitra-Carlite, HAMMERKRAFT may be baked on a short schedule (300° F. for 20 minutes). ***One Coat Finish, requiring two spray operations but only one bake.*** Gives a beautiful, smooth, hammered-effect surface—easily cleaned.

Highly acclaimed wherever tested, Vitra-Carlite HAMMERKRAFT is worth your immediate investigation. Available in many colors.

Send today for Your Free Trial Sample and complete Instructions for use. Our full facilities are at your service.

HILO VARNISH CORP.

"Over 76 Years in the Industry"

42-60 STEWART AVENUE BROOKLYN, N. Y.

BOSTON ● CHICAGO

HILO

great expense is involved. None of this costs the customer a cent, as it is the aim of the manufacturer to give his customer the product he desires.

It would be an illuminating experience for a finisher to spend a week or two in a paint plant. After that, I'm sure he would be very careful about adding anything like linseed oil to his lacquers, or in experimenting with something he has little knowledge of.—RUSSELL DAVIS.

Spraying Filler

Regarding Mr. MacDougall's comments (page 62, March 1940) about my article in Feb. issue, I do not want to get into any controversy with him. I suppose that what he wrote is based on his own experience in applying filler. At one time I thought along the same lines that he writes. But I know now that filler can be successfully applied by the spray method, with just as good results and at far less labor costs than by the hand brush method. This is no longer a pipe dream or a supposition with me. My article was based on cold facts backed by my own experience.

Since we installed our conveyor system, our production in units of furniture has increased 25% over our old set-up. Now I am using only one man to both spray and brush filler on the furniture. Under our old set-up I used four men to brush on the filler, so you see one man is spraying 25% more units of furniture than four men formerly brushed on. A very nice saving in labor, I think.

Other points I might mention, in reply to Mr. Dougall, are as follows:

Padding-in filler: I have always used a man to hand or machine pad the filler into the pores or grain of the wood. This is absolutely necessary on any wood filling, where a good job of filling is desired.

Shrinkage of filler: I honestly believe there is less shrinkage with the synthetic fillers of today than with those old fillers we used in the past, and that filler properly applied and padded in will not shrink any more if it is sprayed on than if it is brushed on.

Special type of filler: We are using the same type of filler that dozens of other furniture manufacturers are using and applying both by brushing and spraying. It is a synthetic filler and I am sure it is superior to the old type fillers, both as to filling qualities and drying.

Price of filler: We are paying the same price for this filler that we paid for the old type filler that we brushed on before we installed our conveyor system.

Cost of straining filler: There is no extra cost to this. We simply put a fine wire mesh or cheesecloth over our funnel as we pour the prepared filler into our pressure tanks.

Cost of equipment: The labor cost saved in one year will amount to more than twice the cost of the equipment necessary to spray on filler.

Hose and guns clogging: We have very little trouble along this line. If the fluid hose to a filler pressure tank is blown out clean after each day's work, very little if any trouble will be experienced with clogging. We are getting excellent service from our filler fluid hose. In fact, we are using the same hose that we put on

EGYPTIAN *high-bake* N.F.R.

A tough, mar-proof, chemically resistant synthetic finish for all types of metal products . . . Extremely durable. Increases resistance to abrasion and other forms of wear

WIDE RANGE OF BAKING TEMPERATURES

SPECIAL UNDER COATS FOR ROUGH CASTINGS WHICH AIR DRY FOR SANDING YET MAY BE BAKED AS A COMPOSITE FINISH AFTER APPLICATION OF EGYPTIAN *high-bake* N.F.R.

ONE COAT DIRECTLY ON SMOOTH METALS. NO PRIMING COAT NECESSARY.

Ask for further information

THE EGYPTIAN LACQUER MANUFACTURING CO.
ROCKEFELLER CENTER
NEW YORK

EGYPTIAN FINISHES

- In addition to High-Bake N.F.R. we also make a complete line of clear and pigmented lacquers for standard and individual requirements. These are furnished for spray dip or brush application . . . Air-dry and bake.

Ask for details

EGYPTIAN FINISHES

EGYPTIAN *Superior* FINISHES

when we started our system almost 18 months ago.

Cost of electricity and air power for operating the filler spraying equipment: All of the electric current used is what we need to run the motor-driven exhaust fan for one spray booth. Each man brushing on filler steadily will wear out one brush in a week. A good quality filler brush costs at least $2.00, so my four filler brushes (as used formerly) were costing my company $8.00 per week, which is easily enough to pay for the electricity to operate an exhaust fan for one spray booth. Practically all plants have enough compressed air to run two or three mixing tanks without hindering their compressed air output.

While the spraying of filler is comparatively new, I am sure that within a short time this method of applying filler will be in universal use by all progressive furniture manufacturers.—H. W. CHESTER.

Refinisher's Floor Plan

I am employed as finisher for a large retail store. All furniture, stoves, washers, ironers, refrigerators and anything, in fact, goes through my hands for touch-up work. In the case of furniture, about 90% of it is given a coat of clear lacquer.

Our paint shop is about 25-ft. square but during the coming summer we are going to build a new shop—possibly 40 or 50-ft. square. What I would like to know is, have you a floor plan or layout for such a shop along modern lines, showing location of compressor, spray booth, exhaust fans, paint bench, etc.?

Our work is not concerned with doing complete pieces of furniture, but consists chiefly of touching up and applying clear lacquer, although occasionally we do complete pieces or suites.

The manager here has suggested that a corner of the shop be closed in so that we can enamel a radio or refrigerator without removing all other furniture from the room. In the present room I am using two spray guns with about 25-ft. of spray hose each. —D.B. L.

We have no suggested floor plan layouts for a touch-up and refinishing room such as you are planning. However, it occurs to us that you could probably plan a satisfactory layout yourself by first making a large scale drawing of the room, with all windows and doors shown. Then make scale drawings on colored cardboard of your work bench, compressor, spray booths, articles to be touched up or refinished, etc., and cut these out so you can position them around on your white floor plan layout. Knowing the size and type of articles that will come into the room to be touched up or refinished, we believe you can arrange the whole layout so that you will have plenty of working room and room for the temporary storage of a few articles that must remain in the room for a day or more.

The plan of having a corner of the room closed to permit of finishing a radio or refrigerator without moving other items out of the room, may be a good idea. However, instead of putting in permanent partitions, you might be able to use some kind of doors, curtains or removable partitions

A new kind of finish for wood and metal

WAX-O-NAMEL

BY THE MAKERS OF JOHNSON'S WAX!

an enamel that dries with a WAX finish!

"Wax-O-Namel contains Wax. It gives a more beautiful, longer-lasting surface—adds eye-appeal—and, because of its mar-proof quality, definitely reduces 'rejects' in manufacturing."

Smoother Surface—Due to the wax content, Johnson's Wax-O-Namel provides a smoother and more mar-resisting finish, a deeper lustre.

Adaptability—Adaptable to any products in air-dry or bake formulation.

Greater Durability—Rigid tests prove Wax-O-Namel harder to chip, scratch or mar.

The Johnson Industrial Division Specializes in the Manufacture of:

Synthetics
Varnishes
Lacquers
Stains
Undercoats
Enamels

—to meet your specific requirements. Write us about your difficult finishing problems. We will welcome the opportunity to work with you in developing finishes at lowest cost per unit.

Mail Coupon Below *for Further Information*

Please send me without cost or obligation, complete information about the revolutionary new enamel—Johnson's Wax-O-Namel.

S. C. JOHNSON & SON, INC.
Industrial Division
Racine, Wisconsin

*Name*_____

*Address*_____

*City*_____ *State*_____

or folding screens so that this particular corner wouldn't need to be closed except when you were doing some heavy spray work—and then allowing same to dry undisturbed.

On your light spray work, the exhaust should be sufficient to take away all of the overspray and fumes so that nothing else in the room will be disturbed. As a matter of fact, in regular furniture and radio cabinet factories there are no enclosures placed around the spray booth to separate same from the remainder of the room. An adequate exhaust takes care of preventing any spray dust from getting into the room air and falling on other particles nearby.—ED.

Using the Right Wood Sealer

I HAVE BEEN reading INDUSTRIAL FINISHING for the past 10 years or more but do not recall of having seen much about the importance of using the right sealer over the various stains that are on the market. During my experience in the finishing line I have worked in several places where we had trouble with our sealer coat and, from what I have learned about how to get the best results with the many different kinds of stains and the way to seal them properly, I would like to write something on sealers and their reaction with different stains.

The sealer coat is really the foundation coat for the varnish or lacquer that is to be used for the finishing coats and care should be taken to use the right kind of material. Sealer, to be applied over oil or pigment stains, should not be that of the lacquer type—unless the stain is wash-coated with shellac first. This will prevent the oils from bleeding. It will also prevent any lifting and peeling of the top coats.

Care should be taken as to what kind of varnish is applied over lacquer sealers because there are many different varnishes which, although very good, will not knit to lacquer sealer. Often this causes a lot of trouble in the finish, such as peeling and blistering. This trouble can be avoided if the right sealer is used.

There are a few sealers on the market that can be used over most stains and they will knit to varnish or lacquer with satisfactory results. I am not at liberty to name them here, as that would be construed as advertising. In emergencies I have used an ordinary good lacquer sealer, mixing one part of sealer with two parts of (5-lb. cut) white shellac and three parts of shellac solvent. This will knit to practically any top coat; it will not check and it sands easily.—WM. S. KOCH.

Conveyor Firm Appoints Eastern Representatives

Mechanical Handling Systems, Inc., Detroit, Mich., manufacturers of conveyors and allied materials-handling equipment has appointed two new engineering-sales concerns to represent the company in the East, according to announcement by W. V. Casgrain, president.

Wonham, Inc., 44 Whitehall St., New York, N. Y., will cover Connecticut, Northern New Jersey and the Southern portion of New York state, while Kearney Engineering Co., 2402 Market St., Philadelphia, Pa., has been assigned the Southern New Jersey, Wilmington, Dela., vicinity and Eastern Pennsylvania areas.

Save LABOR-Add BEAUTY-
WITH
Triplex Stain

Triplex Stain gives beautiful results on Maple, Gum, Poplar, etc. In addition to producing a more attractive appearance, it actually saves from one to three operations. May be sprayed, dipped or brushed. Sealer may be applied over it without waiting as it will not rot lacquer finishes. Triplex is available in clear, bright shades of all desired colors.

The background color penetrates the wood, giving permanence of color. The second ingredient permits high-lighting and wiping but avoids a "painty" appearance. The third ingredient increases uniformity.

Only Triplex Stain produces a high degree of uniformity together with a rich, warm undertone in one application.

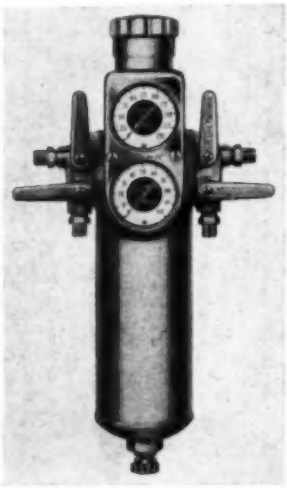
● Triplex will speed up your finish and enable you to secure greater economy, attractiveness and durability. Submit panels or carvings from your regular production and mention your color requirements for a demonstration of Triplex Stain.

JAMES B. DAY & CO.
CHICAGO

Air Transformer

A new air transformer, radically modern in its streamlined design and an outstanding development in equipment for the spray-painting process, is announced by The DeVilbiss Co., Toledo, Ohio.

This transformer supplies the spray gun clean moisture-free air at uniform regulated pressure. It offers greatly increased capacity, improved filtering facilities and more sensitive regulation and control of pressure; handles in excess of 50-cu.ft. of air per minute, with a minimum of pressure drop; will pass ample air for two production spray guns in continuous and simultaneous operation, or for three spray guns in ordinary, intermittent production use.



Filters air; regulates pressure.

Constructional features include a large synthetic rubber regulator diaphragm, refined operating mechanism, and a big conveniently located regulator knob. These result in a fine degree of sensitivity in pressure regulation and positive control of pressure, once it has been set.

An extra large condensing chamber offers greater air expansion and more thorough condensation of moisture. Further effectiveness in air cleansing is accomplished by an improved baffle arrangement. A new and unique mechanical filtering device gives continuous filtering efficiency without wear or attention. The new metal filter, wholly mechanical, eliminates the old-fashioned cotton waste pack and the necessity of its repeated removal and replacement.

Enclosed pressure gauges with modern dial treatment and a die-cast body complete the streamline style of the transformer. The cylinder is chromium plated and highly polished to prevent the accumulation of dust, dirt and paint, so that the exterior of the equipment is easy to clean and to keep clean.

New...

MATERIALS SUPPLIES EQUIPMENT

Snow White Stick Shellac

The M. L. Campbell Co., 706 E. 19th St., Kansas City, Mo., announces the perfection of a superlative new snow-white stick shellac. This pure white wax-like cement is ideal for repairing imperfections in white enamel, refrigerators, stoves and other white surfaces.

Stick shellac is applied with a hot knife or spatula, preferably by an electric knife which maintains a uniform correct heat, saves workman's time in heating, and never blisters the finish or burns the cement.

AMERICAN AIR FILTERS for Protecting PRODUCT FINISHING

American Air Filters offer a simple and practical solution to many of the problems of product finishing. They are used in spray booths to control surplus spray—in compressed air lines to remove entrained oil, moisture and dirt—in finishing rooms, drying rooms and baking ovens to eliminate dust and dirt. Write for Bulletin 244.

Sinuous Spray Booth Filter

The Sinuous Spray Booth Filter consists of a cell and frame with a capacity of 1500 C. F. M.

★

For larger Drying Room ventilation, the Multi-Panel Automatic filter is recommended, while in small Drying Rooms, Airmat Dry Filters are most practical.

Multi-Panel Filter

Airmat Dry Filter

Drying of such finishes as paint, enamel, varnishes, etc., may be accelerated by properly ventilating the drying room. Bringing filtered, warm air in contact with the finished surfaces and exhausting the fume laden air will materially lessen the drying time. Write for Bulletins 230B and 240C.

★

AMERICAN AIR FILTER CO., INC.
706 Central Avenue, Louisville, Ky.

AIR FILTRATION AAF DUST CONTROL

As soon as it is cool the repaired place can be surfaced and polished to match any finish. It never comes loose and is sufficiently hard and adhesive to stand as much abuse as any known finishing material.

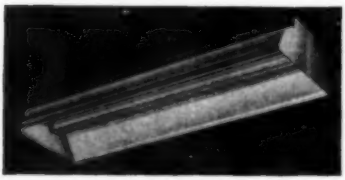
When the imperfection is filled, high spots can be scraped off with a razor blade, then rubbed down and polished with pumice stone and rottonstone. An easier way is to use oil abrade, a liquid that cuts down stick shellac without affecting the surrounding varnish, lacquer or enamel. Even a novice can get perfect results with stick shellac by using this liquid.

Campbell is producing the new stick shellac in more than 60 of the most widely used colors.

Fluorescent Lighting Unit for Industry

For vital seeing conditions in industry, quality fluorescent lighting is now available at low cost. The New Utility Flu-O-Flector shown here is available in two sizes, for two or four 48-in. lamps; the 4-light size provides in excess of 110 foot-candles of light 4-ft. away from the unit. This means higher light intensities for industry with lower current consumption, plus indoor daylight, plus cooler illumination. Engineered feflector design affects maximum light output and genuine Alzak reflector gives necessary added "punch" for maximum effectiveness with the fluorescent lamp, a diffusing light source in itself.

Latest accessory equipment is included with high power factor ballasts, removable starter switches, and non-radio interference starting compensator. Full information and lighting curves can be obtained by writing The Edwin F. Guth Co., 2615 Washington Ave., St. Louis, Mo.



New fluorescent industrial lighting unit.

Air Motored Agitators

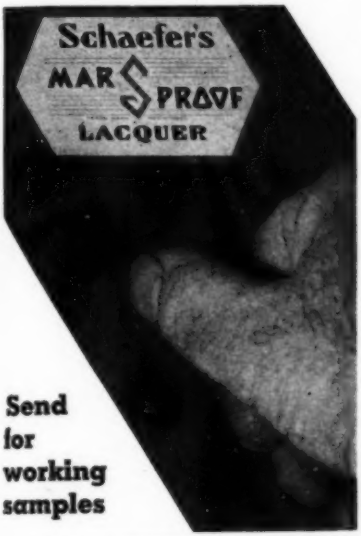
The Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., announces a complete line of propeller-type air-motor-drive agitators for both open and closed type containers.

Air motor operated; variable speeds.

The No. 939 Series for open containers consists of two airplane-type propellers, one pitched right and the other pitched left, so that they "throw" toward each other, insuring more perfect mixture and the prevention of splashing.

These agitators, being driven by an air motor, are ideal for any liquids where there is an explosion hazard.

Shafts can be furnished from 12 to 27-in. long. Adjustable clamps enable the operator to fasten the agitator to the outside of a barrell or drum in any desired position.



try to scratch or mar it!

Here is a lacquer finish that cannot be marred or scratched with the thumbnail, or other destructive agencies—a much tougher piece of goods than the ordinary lacquers. It produces a splendid transparent finish of full depth on maple, walnut, gum, mahogany and other cabinet woods . . . It is made in either the Clear Gloss Rubbing or the Satin Finish. Mar Proof Lacquer Sealer is recommended for first coat.

THE SCHAEFER VARNISH COMPANY, INC.
Louisville, Kentucky

TOUSEY . . *Announces a New Development in Finish*

No. 61 WHITE BAKING DURACOTE

Has a baking time of 20 minutes at 325° and despite the fact that it has a high gloss, is extremely hard and highly resistant to scratches and marring, it positively is not brittle.

Prices and samples will be furnished on request to the

TOUSEY VARNISH COMPANY

520 WEST 25th STREET **CHICAGO, ILLINOIS**

Varnishes—Enamels—Lacquers—Synthetics : Since 1885

The No. 636 Series, consisting of an agitator drive, is for closed barrels that have their own agitating mechanism. The unit is furnished with three adapters for all usual openings.

G.E. Infra-red Drying Lamps

Development of a complete line of drying lamps, designed to produce a wealth of effective infra-red (heat rays) instead of light, is announced by General Electric's lamp department at Nela Park, Cleveland, Ohio.

Most powerful of the four infra-red sources is a 1000-watt unit. Of medium intensity is the 500-watt unit. There are two 250-watt drying lamps: one requiring special reflector equipment, as do the 1000 and 500-watt lamps; the other having its own reflector "built into" the bulb.

Use of the new lamps in a wide range of trial installations clearly shows that heat from the lamps can be used to great advantage in a variety of industrial operations. Radiation from the drying lamp is of such a nature as to quickly dry and bake industrial finishes of many kinds. The new line permits users to speed up process drying, expedite surface heating, and to facilitate today's trend toward straight-line continuous-flow production.

Owing to low heat losses, efficient directional control, light weight of equipment, minimum heat dissipation, compactness and flexibility, a drying set-up using the lamps permits new economies in this phase of industrial operation.

A tungsten filament, the basic element in the GE drying lamp, operates at a higher temperature than do the heating elements of other types of equipment commonly used for drying purposes. Infra-red radiation generated by the lamps consists largely of those heat waves known to penetrate objects most deeply before being absorbed. The lamps are designed to produce a maximum of infra-red radiation at the most effective drying wave length of infra-red consistent with economic lamp life. The average laboratory life of these lamps is in excess of 5000 hours.

Brilliant Silver Color; "Chromelume"

Incorporating a number of features said to be much in demand for finishing metal surfaces, the Tousey Varnish Co., 520 W. 25th St., Chicago, Ill., has announced a new industrial finish called No. 1 Chromelume, a ready-mixed aluminum. These features are: 1) extreme brilliance, 2) will air dry in 15 minutes, 3) will not rub off after aging, 4)

New GE drying lamps; average laboratory life exceeds 5000 hours (208 24-hour days).

Make a Note of This...

THRESHER PER-FEX-ION SYN-AMEL-SERIES 600

An entirely new development in finishing materials! For: Refrigerators, Washing Machines, Kitchen Cabinets, Hospital Equipment, Metal Specialties, etc. This product has:

1. Excellent Resistant to water, soap, stain, and grease.
2. One coat covering with greater color retention.
3. Unusual marproofness and adhesion.
4. Excellent appearance and ease of application.
5. More Sales Appeal for your product.

Available in White, Black, and colors. Baking schedules to suit your convenience. We will be glad to demonstrate.

THRESHER'S High Standard Varnishes MADE GOOD SINCE 1859

THE THRESHER VARNISH COMPANY
DAYTON, OHIO

PAINT—VARNISH—ENAMEL—LACQUER

3 PROBLEMS SOLVED BY

Improved Water White Lacquer

HERE'S a water white lacquer offering a unique combination of advantages . . . as a top coat over white lacquers . . . as a natural finish on firwood veneer . . for interior work on house trailers, etc. These specifications tell you why!

(1) 27% Solids
Sprays with ordinary equipment. Eliminates the expensive, time-consuming second coat.

(2) Non-Yellowing

(3) Very High Gloss
May be rubbed or polished if desired.

MARTIN VARNISH CO.
900 WEST 49TH PLACE CHICAGO, ILLINOIS

NO-MAR— *A Specialized New Finish*

For Wood and Metal Industries

FASTBAKE — HIGH GLOSS — EXCELLENT ADHESION, COVERAGE—NO MAR FINISH

WHITE — CLEAR — COLORS

The Akron Paint & Varnish Co., Akron, O.

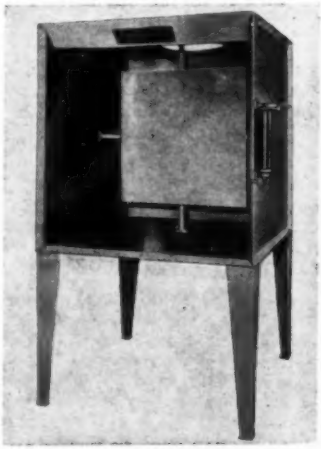
covers approximately 2000-sq.ft. of surface per gallon, 5) will not settle or pack in container, 6) can be dipped, sprayed, or flow coated, 7) retains its elasticity, and 8) keeps its remarkable luster and will not powder.

No. 1 Chromelume has proved successful as a finish for a wide number of products, such as office equipment, cabinets, machinery, instruments, and metal vaults. Other Chromelumes have been developed for outside durability, water immersion, and heat resistance.

Interchangeable Panel Spray Booth

A small low-cost spray booth made of five 3½-ft. square, interchangeable, 22-gauge, sheet metal panels is announced by Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill. It is furnished with or without 31-in. legs. The panel with the 15-in. exhaust fan can be placed at the back, top, bottom or either of the two sides, according to the requirements or preference of the user. Extra equipment includes exhaust piping, 90° elbows, roof flange and weather canopy, all 15-in. in diameter.

The exhaust fan is built to meet Underwriters' specifications. The motor is mounted outside the exhaust duct on an adjustable base. A V-belt drive extends through a dust-tight housing. The fan is mounted on Oilite sleeve bearings. Fan blades



Available with or without the 31-in. legs.

are non-sparking and non-corrosive. The motor is of the ball-bearing type and approved for spray booth use.

Flock Spray Gun

The Paasche Airbrush Co., 1909 Diversey Parkway, Chicago, Ill., announces a high speed flock gun for manual operation—a gun identified as the Type FF ¾-in. High Production Flock Gun. This gun is designed for rapid application of flock when supplied from a flock pressure tank

or mechanical feed hopper. Body of gun is forged brass, nickel plated. It has aluminum alloy pistol-grip handle, with easily operated trigger. When double-action trigger is fully

Assures a continuous flow of material.

drawn back, a wide continuous stream of flock is delivered. A slight pull on the trigger releases a blast of clean air for blowing off excess flock.

It is light in weight and convenient to handle; will not clog; has ¼-in. standard pipe; can be equipped with specially designed nozzles for unusual applications.

Treats Aluminum to Receive Paint

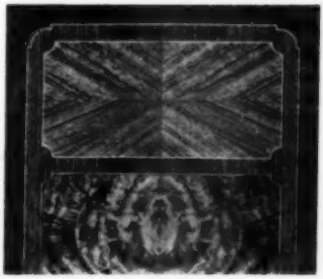
(Pylumin Process)

After extensive work in the metal finishing laboratories of the Pyrene Mfg. Co., 560 Belmont Ave., Newark, N. J., a simple process for the treatment of aluminum has been developed. Like the well known Bonderizing process for steel, it is equally efficient for the protection of the metal itself and for its preparation for paints and enamels.

The Pylumin Process provides a simple, inexpensive and rapid method of producing satisfactory paint-base coatings on aluminum and aluminum alloys.

Pylumin powder is a mixture of several chemicals, which when dissolved in boiling water, forms a solution that reacts quickly upon aluminum, converting the surface

Now...economical reproduction of natural WOOD GRAIN



by the SILK SCREEN PROCESS

NEW! SENSATIONAL!

Now you can reproduce FAITHFULLY natural wood grain, outlays, marquetry, etc., on economical woods. ONE OPERATION only. LOW COST. If you have a particular panel to duplicate—you can do it easily and economically with the NAZ-DAR Silk Screen Process.

Write for details.

NAZ-DAR COMPANY
4014-22 N. Rockwell Street
CHICAGO, ILL.

Manufacturers of Silk Screen Process Paste Paints, Equipment and Supplies

into a non-metallic film of complex basic oxides, thereby forming a coating that is highly resistant to corrosion and which also serves as a base for paint, lacquer or enamel finishes. Pyluminized metal is of a uniform gray to black color, depending on the composition of the metal treated, and velvety in texture.

The Pyluminizing operation involves only the simple immersion of parts in a heated solution in a steel tank. The processing action is fast, requiring only three to ten minutes immersion in the boiling solution.

Because of this short processing time, the process is suitable for adaptation to conveyor methods, but small production, not warranting conveyor equipment, can be handled by means of baskets or racks in small tanks. After processing, rinsing in hot water and drying, the parts are ready for the application of a decorative finish.

Clear Wood Sealer, "Sealacell"

A clear thin liquid that penetrates deeply into wood surfaces, making the wood resistant to moisture and all wood-destroying organism is announced by General Finishes, Inc., St. Paul, Minn. This remarkable penetrating sealer, "Sealacell," can be used by itself or mixed with oil stains, sealer, paint or varnish.

Used by itself and applied with a brush, wiping rag or spray gun, it creeps and flows into cracks, joints, ends and overlaps, protecting wood otherwise unguarded. So effectively does "sealacell" combine with wood, that grain, burl and texture are brought to full, natural beauty.

"Sealacell" makes an excellent undercoat for most surface finishing materials, and in addition effectively penetrates to prevent checking of wood under finishes.

The company maintains a labora-

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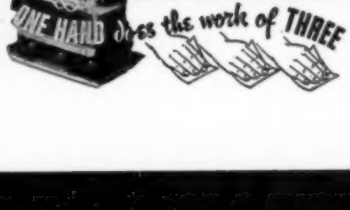

tory which is available to the industry in solving problems pertinent to its materials. It offers five different sealing treatments to cover thoroughly the varied requirements encountered in industrial finishing.

Exhaust Fan

The Truflo Fan Co., 529 Main St., Harmony, Pa., announces two series of new wall fans of aluminum alloy construction, ranging in diameters from 12 to 36-in., and 42 to 48-in., and employing four and 6-blade pro-

A 30-in., 4-blade exhaust fan.

pellers, respectively. Motors range from 1/40-hp. to 7½-hp., with a maximum capacity of 40,000-cu.ft. of air per minute.

The accompanying illustration shows a 30-in. 4-blade propeller fan, commonly used for exhaust purposes. When desired, these fans can be supplied with guard and automatic shutters. The frame and the propeller blades are both made of high tensile aluminum alloy, and each is cast in one piece. Such construction permits proper balance at high speeds, reducing excessive weight on motor shaft and insuring as nearly perfect running balance as possible. This correct principle of construction eliminates power loss and increases

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The fans may be designed for any available current. Motors are available for single and variable speeds, and may have horizontal or vertical mountings. The latter require ball-bearing motors. Speeds of the larger fans range from 340 to 860-r.p.m., and the smaller ones from 715 to 1750-r.p.m.

"Dipspray" Process of Wrinkle Finishing

A DESCRIPTION of the patented "Dipspray" process of applying a wrinkle finish on clean metal castings, as outlined and illustrated in a circular sent out by New Wrinkle, Inc., Dayton, Ohio, includes the following information:

First, the castings are dipped in a thin solution of wrinkle finish. This dipping process not only insures complete coverage for all exposed-to-the-eye surfaces, but securely seals all the pores on hidden surfaces where rust-proofing is the only duty a finish serves.

Second, the castings are placed on a slightly inclined, removable screen-covered rack so the surplus paint is collected in a tray which returns it to the dipping tank. By racking the castings in this manner and letting them stand for several minutes the finish is given an opportunity to set.

Third, the castings are now ready for a quick spraying with a minimum of waste, as the atomized material readily adheres to the wet casting surface.

The new wrinkle-finished castings are then removed to ovens where they are subjected to heat of 200°F. for one hour. It is during this drying process that the

wrinkling of the finish takes place to produce the beautiful effects for which it is noted. In addition, any small flaw in the casting surface is concealed and the lack of ultra-finishing operations is not even seen.

Three castings are cited as a typical example. These are doors for water heaters. Prior to using the Dipspray Process, these doors were spray finished at the rate of 100 per hour, with 20% rejects. With the Dipspray Process, not only was a more uniform finish secured, but it was put on at the rate of 200 per hour with no rejects. In addition, finishing material costs were reduced from 25% to 40%.

Rubber Polishing Wheels

The Lea Mfg. Company of Waterbury, Conn., has been appointed distributor in New England for the line of soft rubber polishing wheels manufactured by The West Co., Inc., Philadelphia, Pa.

The Finish on Your Product

The above title appears on a small booklet recently published by Ferro Enamel Corp., Cleveland, Ohio. The contents reveal information, based on laboratory tests, about porcelain enamel finishes.

Deoxylyte and Clorodine

New bulletins of information about the two valuable products named above, have been prepared and made ready for distribution by the American Chemical Paint Co., Ambler, Pa.

Deoxylyte is an inhibited acid used in connection with pickling and cleaning ferrous metals. It retards rust on pickled steel, neutralizes rust-producers, removes light rust from oil-free surfaces, and prepares same for painting.

Clorodine removes lime deposits and rust from can and bottle washers, engine cooling-systems, boilers, condensers, pipe lines and water systems, without harm to the metal.

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EDITORIAL

Companies Do Appreciate Worthy Young Men

As a result of the editorial about "Our New Foreman Finishers; Where Will We Get Them?" published in January issue, we received a communication from a young man who stated some of his experience and questioned, "How many companies are really interested in securing men to train them?" His letter appeared in February issue, beginning at the bottom of page 8. He expressed himself as being eager to secure a connection "with a company that is really interested in a man who wants to work and develop their finishing work."

Three letters have come in asking for the young man's full name and address. One was from an individual connected with a finish manufacturer and two were from manufacturers of furniture and cabinet work.

We interpret this as evidence that there are some companies which are interested in taking on and training the right kind of young men and developing them to assume positions of responsibility. We might add, too, that the right kind of young men, who will appreciate such opportunities and who will accept offers promptly, are not always easy to find.

Economy in Shop Layouts

Strange as it seems, several manufacturing establishments are showing a consistent loss in both operation costs and in facilities for working economically. Some of them have grown and developed from small beginnings. When added space was needed they merely expanded the easiest way, with little or no thought for needed future development.

As a result we see spray work being done in scattered localities, the only apparent requisite being proximity to a compressed air line or to some handy outlet for spray exhaust.

Lost motion may be present in the finishing of hair pins just as much as in the finishing of aircraft. In making an efficient layout, emphasis should be placed upon the receipt of the raw material, and each step should be carefully guided until such fin-

ished product has left the finishing room for the shipping department. Otherwise, a waste of both time and labor costs will occur.

Each production department should be so arranged that there is a natural progression in all operations. Products should go from the initial operations to those next in sequence, with no unnecessary moving or transferring required—and thence to the packing and shipping departments. Whether or not the product is pushed by hand trucks or by overhead hangers makes no material difference. Either one of them may show sufficient lost motion to mean a considerable difference between operation cost and the final sales price.

Especially is this true in the modern finishing room layout. Since in these days of practically stabilized prices for finishing materials, there is little or no possibility for effecting much saving in material costs. Proper routing and shop layout may well be given some deep thought at this time.—C. D. Y.

Keep Your I. F. Magazine for Reference Information

Requests by important companies and executives for back copies of INDUSTRIAL FINISHING and for tear sheets and reprints of articles appearing in previous issues are so frequent that our limited office supply soon becomes exhausted. We do not make reprints of articles unless same are ordered in large quantities.

The gold mine of practical, timely, exclusive and original information published in INDUSTRIAL FINISHING appears in print only once (with few exceptions), therefore we urge readers to keep a complete file of all copies received. Some articles that don't interest you much today may be of vital importance to you or someone in your organization tomorrow.

Infra-Red Ray Lamps For Bake Finishing

★ Infra-red ray drying, heating and dehydrating processes have been an outstanding development of 1939. Although the process has been used for four or five years in certain plants, it has only been during the past year that the amazing possibilities of the process have been discovered and developed in industry at large.

The actual use of radiant energy for drying naturally dates back to the first time someone set something out in the sun to dry. The sun is a prime source of radiant energy—those rays which flow into the spectrum scale between 6500 and 14,000 angstrom—the penetrating, visible and infra-red section.

The merits of this method of drying, heating and dehydrating are many. . . . Infra-red rays travel at approximately the same speed as light and become effective immediately; no warming-up time is required. Drying is not limited to the surface of the exposed material but occurs throughout the complete mass, or to such

***Guest Editorial . . . . Many readers can write an excellent editorial — two or three paragraphs presenting a timely suggestion or valuable idea that will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.**

depth as the energy can penetrate without reflection.

Infra-red ray drying is rapid. . . . . Because of this speed of drying . . . . the amazing flexibility of the infra-red ray process is apparent. For example, the present conveyor system can be used for the process without extending length of travel.—C. F. B.

Improvements in So-Called Non-Grain-Raising Stain

* I have recently noticed a substantial increase in the use of so-called non-grain-raising stain of an improved type. One reason for this, I believe, is the general improvement in the furniture industry . . . . demanding a shorter finishing schedule which is possible with these new improved non-grain-raising stains.

I believe the increase in the use of mahogany, especially crotch, swirl veneers, and also Philippine mahogany in the solid form, has a lot to do with the change. These last named woods are very easy to spoil if water stains are used in the finishing process. Crotch mahogany will check easily, even if glued with the new process glue; sometimes it is checked before being glued up. Philippine mahogany will roughen up so much, if water stain is used, that it is impossible to sand the surface smooth enough without destroying the stain color; it has to be stained several times in order to get a satisfactory depth of color.

These new type of non-grain-raising stains are now made up of water-soluble dyes and are much easier to spray, more penetrating, fade less, and do not require a special solvent. They can be used with alcohol and are therefore more economical. I have recently used these stains with satisfactory results on badly checked crotch mahogany and walnut veneers. It could not have been done satisfactorily with water stains.—FERDINAND ROSEN.

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Applied to cast iron and heavy gauge steel, this coating will remain inert at temperatures that will melt the metal under the coating.

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E. R. Stowell, Patentee, Alanson, Mich.

Modernized Display Fixtures Feature Bleached Woodwork

* "The most fun we've had in years," is the way Marshall Field & Co., Chicago, described the opening of their new women's apparel department—a super job in modernization which display authorities, architects, designers,

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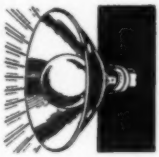

store planners and decorators around the country are frank to admit has set a new standard in department store display technique.

Dramatic layout, lighting and decoration, as well as new window and wall treatments play no little part in the amazing new job of modernization.

Employing a new bleaching treatment on maple plywood, over which a transparent lacquer is used, a stunning new effect is achieved which gives a milky-white luminous effect to the delicately grained wood.

Showcases made of the bleached wood are lined with a grass cloth in a deep grey-beige tone, the deeper tone making an attractive contrast against the creamy white bleached plywood.

Walls of the dressing rooms are paneled in bleached plywood; the interiors of the rooms are lined with plate glass mirrors.

Display niches have small platforms finished in plywood, and in all instances where wood is used in dramatic contrast against walls finished in a deep rosewood color, a startling new effect is achieved.

Modern furniture, especially designed for the new department, is finished in a medium bleached tone. The pieces are upholstered in muted tones or rosewood, green and beige.

Corrugated or fluted glass is used on the windows and as dividers between departments, the glass giving a soft diffused light.

Fluorescent lighting is used throughout the department.—ROSALIE FLANK.

Ken-Wood Bleaches
Create Distinctive
New Finishes
New Bulletin on Wood Bleaches
Kenneth O'Meara
Holland,
Michigan

Mixing, Stirring, or Agitating?

★ In the beginnings of any industry there is a period during which the nomenclature of the materials, equipment and processes is loose. Some words and terms are borrowed. Some are coined. In any case the terminology is built on simplicity, or at least on the basis that nothing better is immediately available. As the industry progresses, however, and more knowledge of both fundamentals and details is gained, there comes a period when more precision in words is necessary. Such is the case in organic finishing today. Witness the replacement of the vague "lacquering" or "enameling" by the more correct, more meaningful term just used, namely, "organic finishing."

As part of the general trend toward more accurate expression in organic finishing, there is the question of which word to use in denoting the process of producing and maintaining homogeneity in an organic finishing material. Is it "mixing"? Should the word "stirring" be used? Or is "agitating" more nearly correct?

It has been suggested that "stirring" be limited to the operation performed on newly opened material, or on that which has been stored for a considerable period and in which settling has taken place; that "mixing" denote the addition and blending of reducers; and that "agitating" be used in connection with reduced material (liquid filler, for example) which is being utilized and which must not settle in the container. Although it appears reasonable, it would seem that this suggestion is open to criticism. Furthermore, a single, all-inclusive word would aid tremendously in simplifying the whole problem.

Considering all three words, "mixing" appears to be the most completely satisfactory and is being recommended for general use. By definition, "mixing" is the "blending or merging into one mass or compound, as by stirring." Since, also by definition, stirring is a lesser form of the word agitating, it can be seen that one may be entirely correct in applying the word "mixing" to all of the various operations used in preparing an organic finishing material for application.—W.G.S.

"Metcolizing" Protects Metal

An 8-page booklet, printed in two colors, describes and illustrates the "Metcolizing" process which is offered by Metallizing Engineering Co. Inc., 21-07 41st Ave., Long Island City, N. Y.

Quoting from the bulletin:

"Metcolizing is a specific, proven process for the economical and efficient protection of iron, steel, and in some cases copper and bronze, against oxidation and scaling at elevated temperatures. It is also recommended for the protection of nickel and nickel chrome alloys against attack by sulphurous gases.

"Metcolizing means:

"1) To apply a coating of Metco H. P. Aluminum (by the metallizing process) to a specific thickness.

"2) To apply over the coating of Metco H. P. Aluminum, a coating of Metcoseal (a low-cost liquid preparation, necessary to the process).

"3) To apply to the article thus coated, a specific but simple heat treatment which causes the Metco H. P. Aluminum to alloy with the base metal.

"Metcolizing is principally applied to iron and steel, in which case a

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compound coating, consisting of five layers, is formed.

"When the article is placed in service under heat, the aluminum continues to oxidize on the surface on the one hand, and to diffuse into the iron or steel on the other, the speed of oxidation and diffusion being dependent on the degree of heat. At temperatures over 1472°F., the oxidation is rapid and the aluminum layer soon disappears, leaving the residual solid solution layer which provides the protection to the coated article at high temperatures. This compound coating is strongly adherent, highly resistant to scaling, and withstands abrasion to a remarkable degree."

Measures Thickness of Finish

The Lea Mfg. Co., Waterbury, Conn., has been appointed New England distributor for the Amineo-Brenner Magne-Gage, manufactured by the American Instrument Co., Silver Spring, Md. The Magne-Gage is an instrument for accurately and rapidly measuring local thicknesses of metallic or organic coatings on metal surfaces without destroying or injuring coating or the base metal.

Spray Booth Filter Bulletin

Filters to place in front of the exhaust ducts of spray booths to protect the fans and ducts from being heavily coated, and to prevent waste spray from being blown outside, are illustrated and described in Bulletin No. 244, published and distributed by the American Air Filter Co., Inc., Louisville, Ky. Pictures of filter installations in the finishing rooms of well known concerns are shown. Filters for cleaning the air admitted to the finishing room and filters for compressed-air lines are also included in this company's products.

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Index to Advertisers

Advance Paint Co.....Third Cover
Akron Paint & Varnish Co.....68
American Air Filter Co.....63
American Electrotype Co.....73

Berry Brothers.....35
Binks Mfg. Co.....36-37

Campbell Co., M. L.....73
Claremont Waste Mfg. Co.....8
Classified Advertising.....79

Day & Co., James B.....61
Despatch Oven Company.....78
DeVilbiss Co., The.....5
Dolan & Company, V. J.....6
du Pont deNemours & Co., E. I.
.....40-41

Eclipse Air Brush Co.....72
Egyptian Lacquer Mfg. Co.....57

Ferro Enamel Corporation.....76

Glidden Co., The.....51

Hilo Varnish Corp.....55

Industrial Tape Corp.....27
Infra-Red-Ray Devices, Inc.....77

Johnson & Son, S. C.....59

Koch Sons, Inc., George.....1

Lilly Varnish Co.....46-47

M. & E. Mfg. Co.....78
Mahon Co., The R. C.....Front Cover
Martin Varnish Co.....67
Minnesota Mining & Mfg. Co.....39
Mitchell-Mayer Co.....71

Naz-Dar Company.....69

O'Meara, Kenneth.....77
Oxford Varnish Corp.....79

Paasche Airbrush Co.....49
Patterson-Sargent Co.....Back Cover

Rockford Varnish Co.....53
Ross Engineering Corp., J. O.....33
Roxalin Flexible Lacquer Co.
.....Second Cover
Rudd Lacquer Corp.....42

Schaefer Varnish Co.....65
Shelburne Company, A.....72
Spruance Co., Gilbert.....10
Sterling Products Co.....70
Stille-Young Corp.....11
Stowell, E. R.....76
Stresen-Reuter, Inc., Fred'k.....71

Thresher Varnish Co.....67
Tousey Varnish Co.....65

United Lacquer Mfg. Corp.....9

Varnish Products Co.....7

Zapon Division—Atlas Powder Co...2
Zapon-Brevolite Division—Atlas Powder Co.....2

For the past ten years I have been foreman of our finishing department. I am experienced in almost every metal finish there is except the baked finish. We intend, in the near future, to use this finish on some of our parts. It would be appreciated very much if you could send me complete information and details on the baked finish, starting with the cleaning solutions used on different metals, enamels used, temperatures required for baking different enamels, and estimating the cost of jobs.—J. G.

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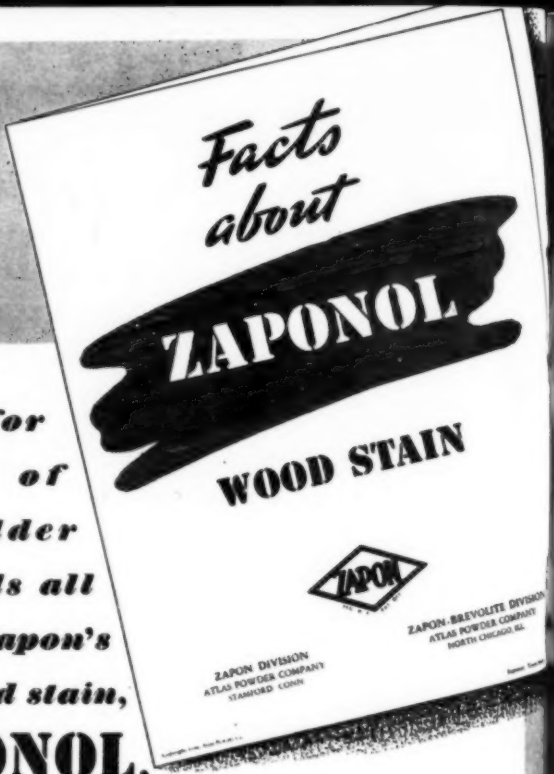

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